MECHANIX ILLUSTRATED©

A Fawcett Magazine

Механикс иллюстрейтед
новое лучшее том 2

NOVEMBER

STILL 15c

LATEST CULVER
RADIO-CONTROLLED
TARGET PLANE

GIVE TO YOUR WAR FUND

HOW RADAR WON THE WAR!
PASTEPOT FURNITURE *IN FULL COLOR*

MECHANIX ILLUSTRATED

Title registered U S Patent Office

Co-editors: ROLAND CUEVA, GILBERT PAUST

Associate Editors: Edward Kelly ..... *Features*
George Daniels..... *Crafts & Science*
Jo McCallion ..... *Production*

W. H. FAWCETT Jr.
President

ROGER FAWCETT
General Manager

RALPH DAIGH
Editorial Director

ROBERT HERTZBERG
Executive Editor

ST. PAUL PUBLIC LIBRARY
OCT 20 1945
RECEIVED

NOVEMBER, 1945 — **VOL. XXXV NO. 1**

On the cover: *Color photo of Culver Cadet by Hans Groenhoff*

SPECIAL FEATURES

THE WEAPON THAT WON THE WAR—
by James Nevin Miller 35
The complete story on radar

THEY WANTED TO CHANGE THE WORLD 42
The Nazis were planning nothing less than the damming of the Mediterranean and the Congo, and the flooding of the Sahara!

HIGHBALLING TOWARD TOKYO—
by William Burke and Bob Gordon 45
The tremendous job the railroads faced in transporting men and supplies to the West Coast for the Pacific War

JUNIOR JATO 48
Jet-assists eliminate hazards of power failure in postwar flying

THE MIGHTY ATOM—*by Willy Ley* 50
Have you been looking for a simple, clear scientific explanation of the atomic bomb? One of the country's leading science popularizers here supplies it

SCIENCE IN PICTURES .....Beginning on 55

PASTE-POT FURNITURE—*by Louis Hochman* 67
Glamorizing furniture with the old art of decoupage

JEEP-OF-ALL-TRADES—*by Orrin Wright* 72
Your favorite vehicle in civilian life

GYRO CARS FOR FUN—*by Ed Yulke* 74
You'll get a kick out of flying a motorless autogyro

BUTTERFLIES ARE BIG GAME—*by C. H. Curran* 77
You don't think so? Then read this story and learn why they are

YANK INGENUITY 80

DEPARTMENTS

YOUR INVENTION CLINIC 12
CHIPS FROM THE EDITOR'S WORKBENCH 14
MONEYMAKERS AND MONEYSAVERS 26
(Classified Ads)

CRAFTS AND HOBBIES

PORTABLE MARINE RADIO 83
RENEWING KNIFE HANDLES 87
HOME AIDS 90
HOME DECORATIONS WITH STENCILS 92
HOUSEHOLD NOVELTIES IN WOOD 94
FIREPLACE SCREEN 97
MECHANICAL DRAWING MACHINE 98
HUNTING LIGHT 101
THE SCHOOL SHOP 102
Chapter 32
GRINDING WHEEL DRESSER 105
SHOP KINKS 106
MIDGET TRACTOR 108
NEW PRODUCTS 110
BALL BEARING LATHE CENTER 112
TABLE LIGHTER 114
BRICK BUILDING SET 116
IDEAS FOR SERVICE MEN 118
COPPER FRUIT DISH 120
PHOTO KINKS 121
PHOTO CONTEST 122
IRIS DIAPHRAGM REPAIR 123
FROG FROLICS 124
KEEP IT ROLLING 126
BOATS AND BOATING 128

Copyright 1945 by Fawcett Publications, Inc.

MECHANIX ILLUSTRATED is published monthly by Fawcett Publications, Inc., 1100 W. Broadway, Louisville 1, Ky. Printed in U. S. A. Advertising Offices, 295 Madison Ave., N. Y. 17, N. Y. Editorial Offices, Paramount Building, 1501 Broadway, New York 18, N. Y. West Coast Representatives: Los Angeles, H. P. Houston, Edward S. Townsend Co., Pacific Mutual Building; San Francisco, Edward S. Townsend, Edward S. Townsend Co., Russ Building. General Offices, Fawcett Building, Greenwich, Conn. Eliott D. Odell, Advertising Director; Roscoe K. Fawcett, Circulation Director; Allen E. Norman, Secretary; Gordon Fawcett, Treasurer; Al Allard, Art Director. Entered as second-class matter at the post office at Louisville, Ky., under the act of March 3, 1879. Additional entry at Greenwich, Conn. Copyright 1945 by Fawcett Publications, Inc. Reprinting in whole or in part forbidden except by permission of the publishers. Title registered in the U. S. Patent Office. Address manuscripts to New York Editorial Offices. All remittances and correspondence concerning subscriptions as well as notification of change of address should be addressed to Circulation Department, 22 West Putnam Avenue, Greenwich, Conn. Not responsible for lost manuscripts or photos. Unacceptable contributions will be returned, if accompanied by sufficient first class postage. Price 15c per copy. Subscription price $1.80 per year in U. S. and possessions. Canadian and foreign subscriptions $2.30 per year. Foreign subscriptions and sales should be remitted by International Money Order in United States funds, payable at Greenwich, Conn. Advertising forms close fifth of second month preceding date of issue.

MEMBER AUDIT BUREAU OF CIRCULATIONS

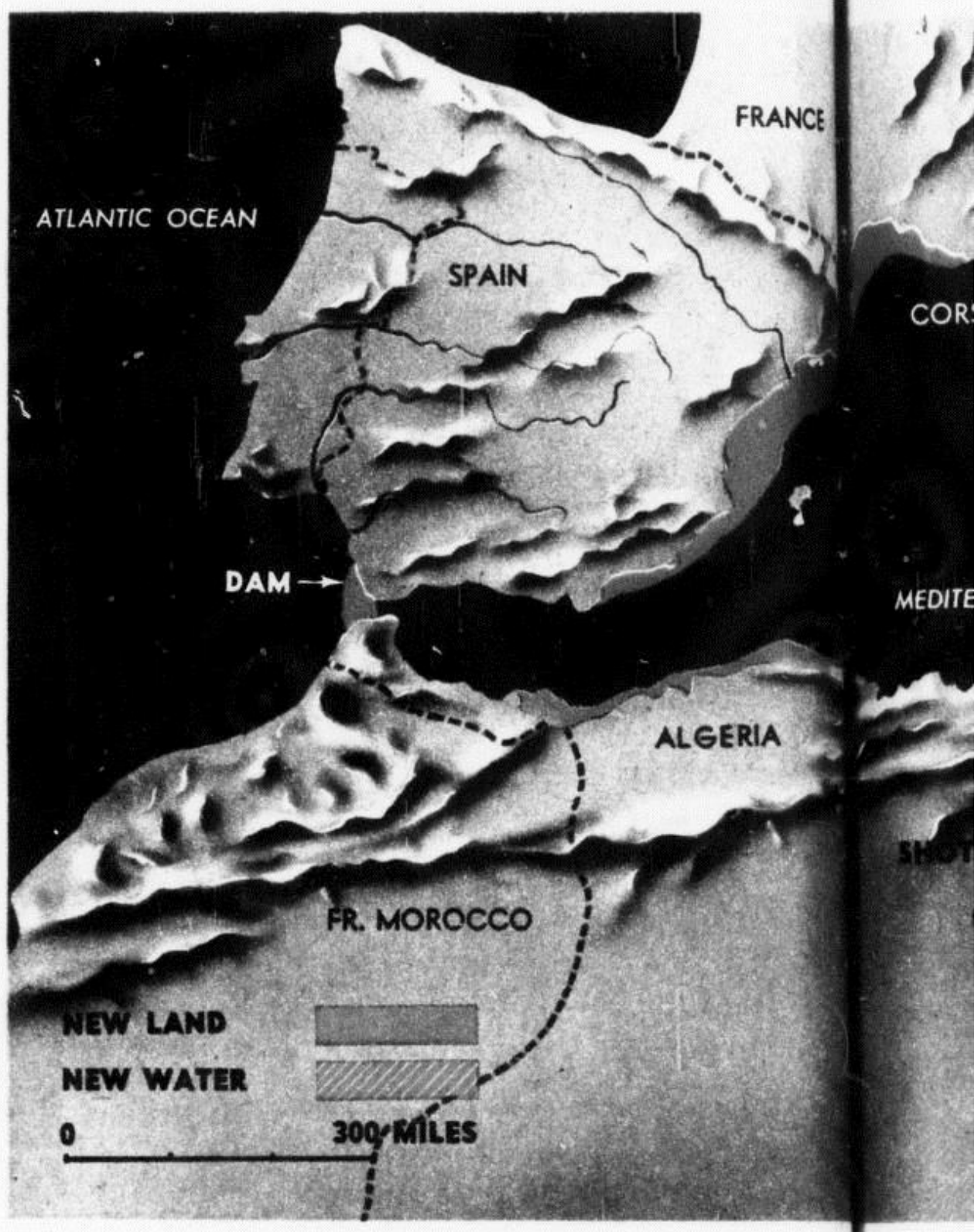
THEY PLANNED

No task was too great for the Nazi supermen—surely not the simple one of changing entirely the maps of two continents.

WHEN the Nazis went all-out for world domination, they really intended to do a job! Putting the entire planet under the control of *der Fuehrer* was but the beginning of their plan. Recently there have come to light some of their stupendous schemes which we might at first be inclined to brand as being fantastic, but which, on closer inspection and in view of recent scientific developments, might not be so mad after all.

The "solar mirror," recently publicized in every newspaper, might be possible if atomic-power generators could be made to support it in space. Doubtless the Nazis were counting upon just such a method of holding it up; they planned that far ahead.

Two of the latest "impossible" projects of theirs were the offspring of the Office of Geopolitics, one of Hitler's favorite party groups. These concerned changes in the European-Mediterranean *Lebensraum* of Germany. The first was called "the Gibraltar Dam," and the second "the Congo Sea."



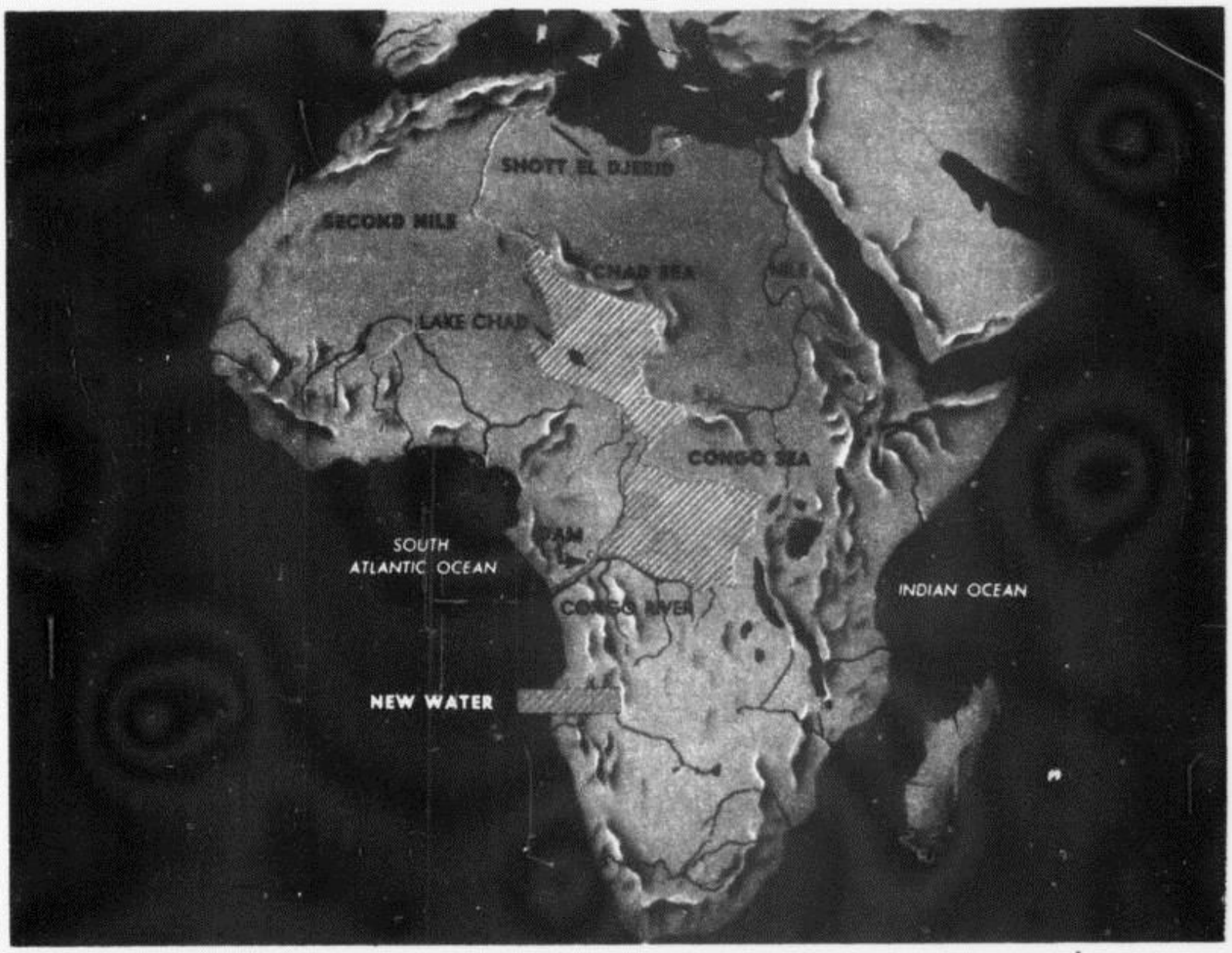
By the simple expedient of constructing a dam at the Strait of Gibraltar, they would have lowered the level of the Mediterranean, exposing new land (red).

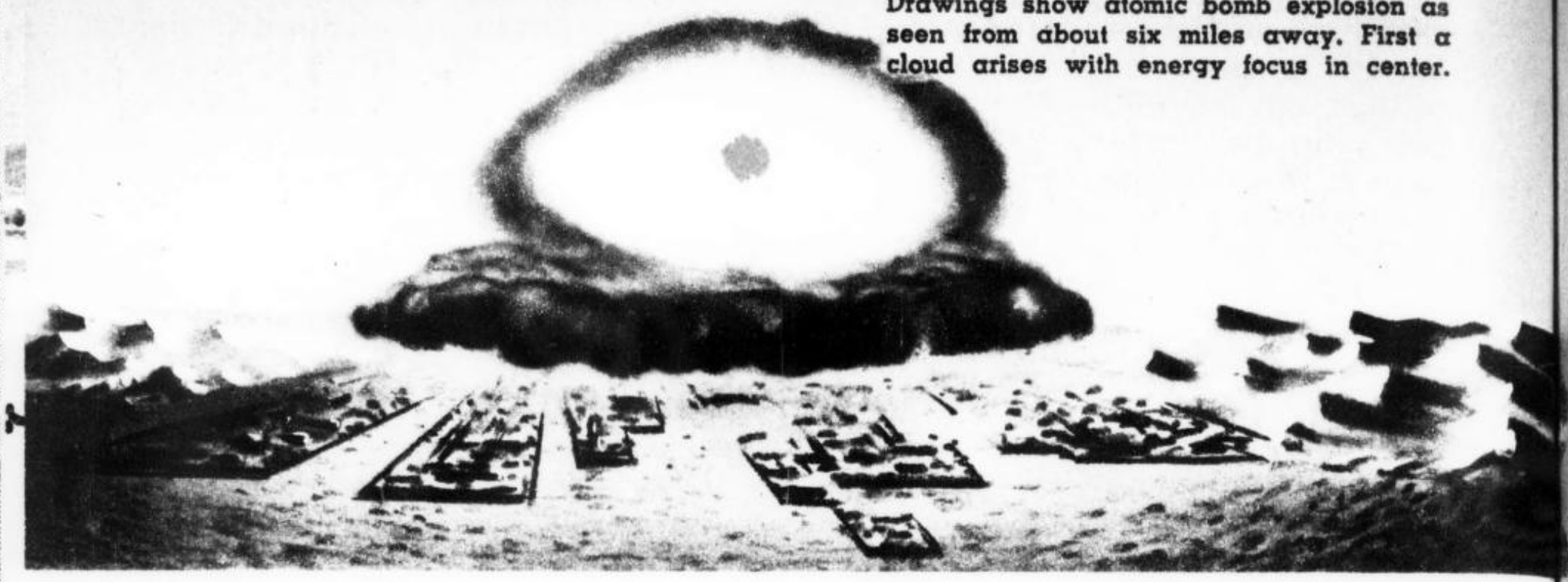
The plan of the "Gibraltar Dam" is by no means a Nazi invention; in fact, it originated at a time when Hitler was still a beer hall backroom speaker with audiences of two or three dozen people. It was originally drawn up by an architect named Hermann Soergel who called his idea *Panropa Plan* and who worked on it for many years in the spirit of "serving through science."

The plan was based on a very simple and well-established scientific fact, that the land-locked Mediterranean Sea has a

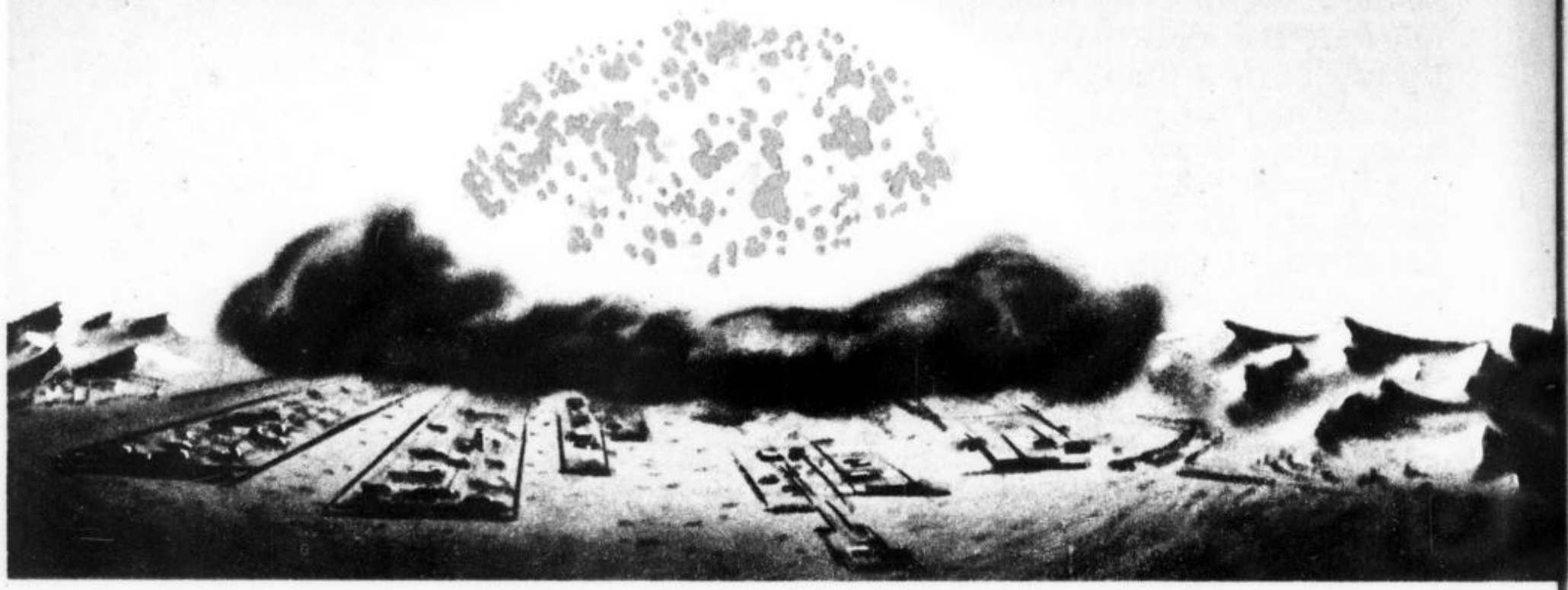
By damming the Congo River in Africa, two seas would have been formed, the Congo Sea and the Chad Sea, furnishing a direct water route (red) from the South Atlantic to the Mediterranean.

TO CHANGE THE WORLD

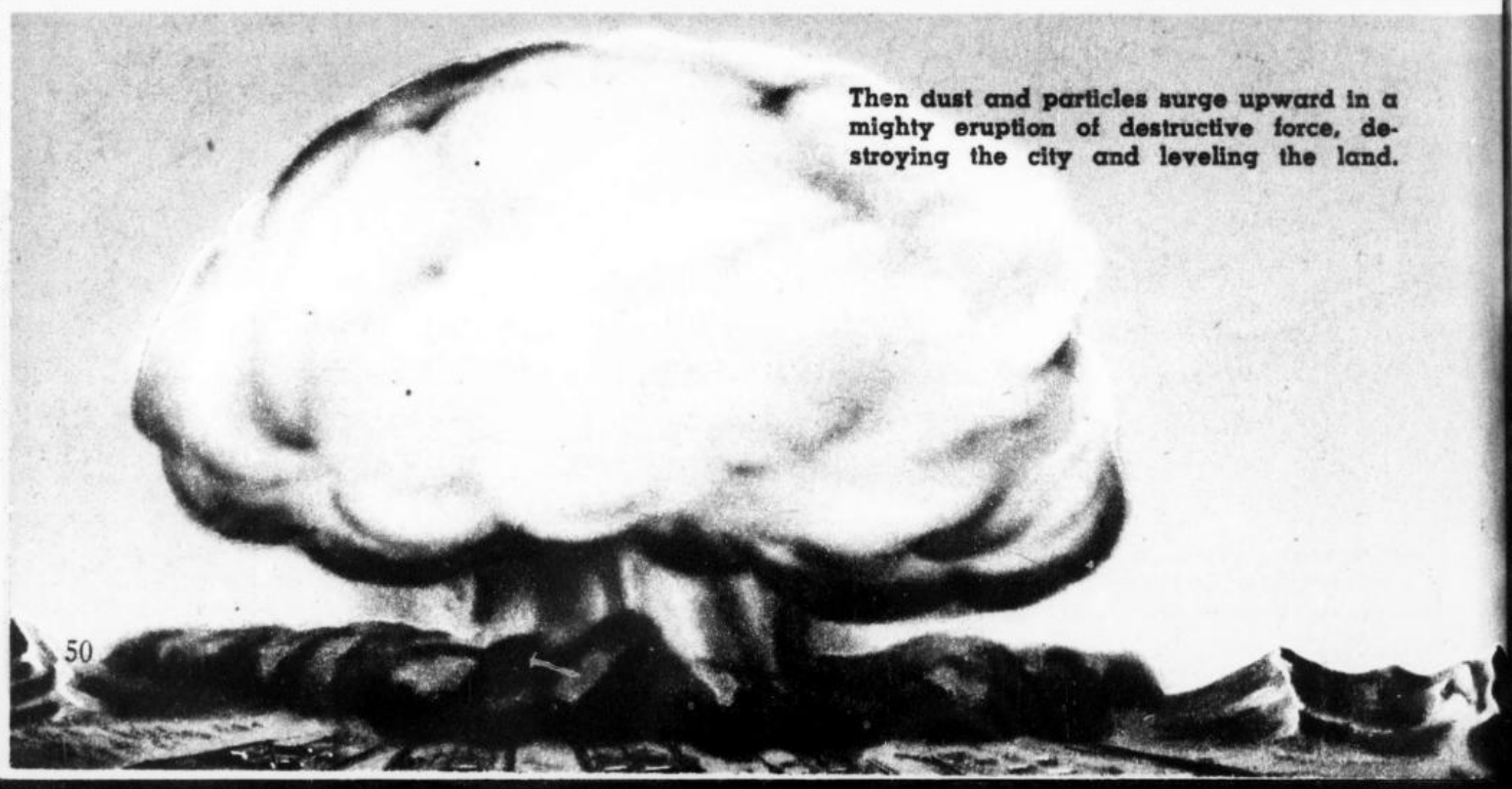




Drawings show atomic bomb explosion as seen from about six miles away. First a cloud arises with energy focus in center.



As cloud grows and chain reaction spreads, energy center multiplies until flaming mass of disintegrated matter fills explosion cloud.



Then dust and particles surge upward in a mighty eruption of destructive force, destroying the city and leveling the land.

THE MIGHTY ATOM

BY WILLY LEY

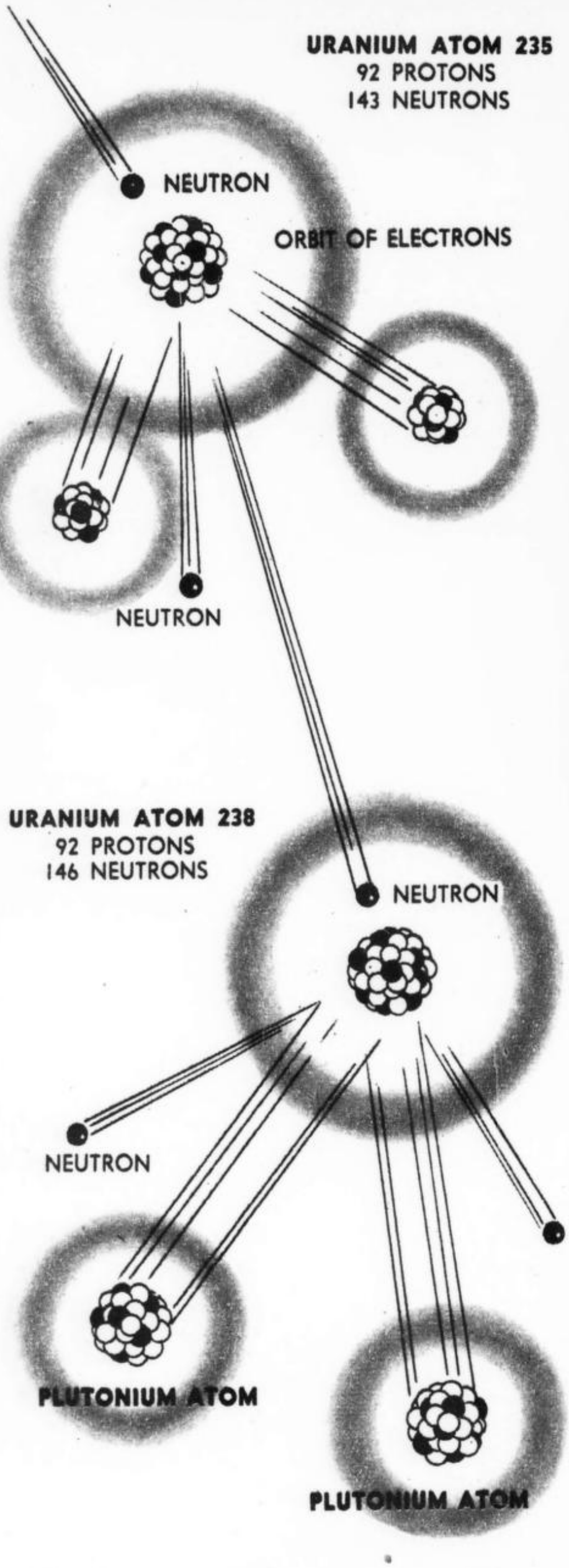
THE atom has been been smashed, and the age-old search for the key to release its power has been found!

When the Second World War broke out, physicists of various nations had just taken the first steps on the road to the secret of atomic energy. They were very important steps because they involved fundamental discoveries; and the secret of atomic energy was generally regarded as the most important secret of Nature.

We all know how this secrecy ended: with a bomb that flashed into energy over Hiroshima and destroyed the city, killing about 100,000 Japanese in one instant. It needed only two such bombs to end the war and to save the Allies an estimated 1,250,000 soldiers and sixteen billion dollars. This weapon will guarantee peaceful relationships among nations for a long, long time to come.

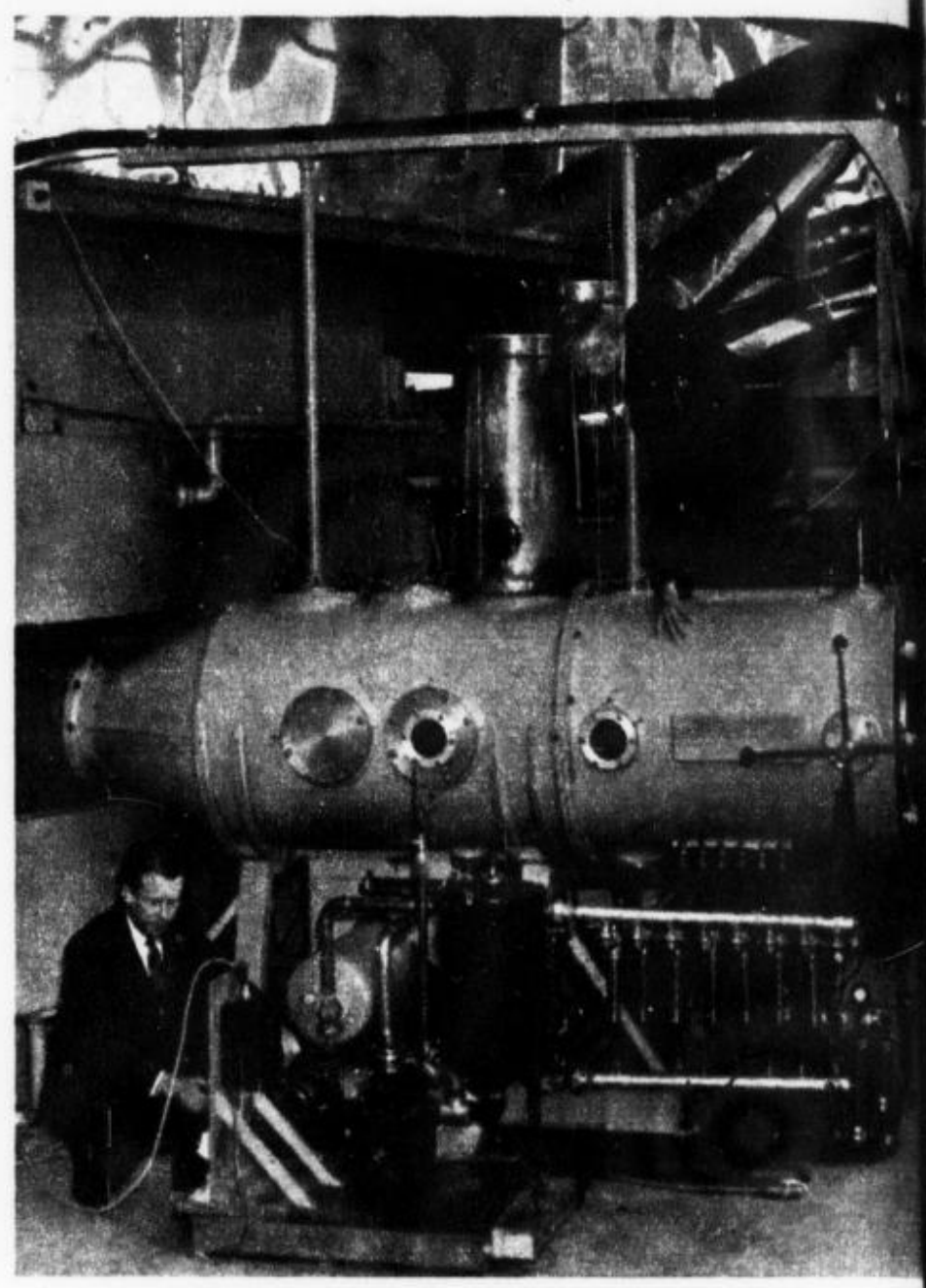
But the construction of incredible superbombs is only a small part of the story of atomic energy. In fact, these atomic bombs, for all their terrible power, may be regarded as merely a by-product of the new science of nuclear physics, just as the production of dynamite and TNT is only a small part of the activities of chemists and of the chemical industry. Personally, I believe

Tower of smoke rises to 40,000 feet and top breaks off to form gigantic mushroom-like mass.



Drawing shows production of new element Plutonium from Uranium-238 and neutron resulting from fission (splitting) of Uranium-235.

that the year 1945 will be remembered for all time as the year which marked the beginning of the Atomic Era, even in those future years when only historians will remember that there was also a war going on in 1945 and that the beginning of the Atomic Era coincided with the end of that war.



Cyclatron atom-smasher of Univ. of Cal. weighs 225 tons, can shoot 19,000,000 volt beam of neutron "atomic bullets" to split atoms and form elements.

Just what natural laws and processes were employed to end it? What is atomic energy? And what is nuclear physics?

The answers to these questions go together. An atom consists of a central body, called nucleus, which is surrounded by a swirl of tiny particles of negative electricity, the so-called electrons. You may compare it with the solar system and say that the nucleus is like the sun, which has virtually all the mass of the whole solar system, and that the electrons are like the planets, which have virtually all the movement in the solar system but very little mass. Conditions inside the atom are the same, except that the central body, the nucleus, is not just one unit, like the sun in the solar system, but is composed of a number of particles. They are held together by ultra-strong binding forces, and these forces are released when the nucleus breaks up for some reason. To release atomic energy simply means to cause the

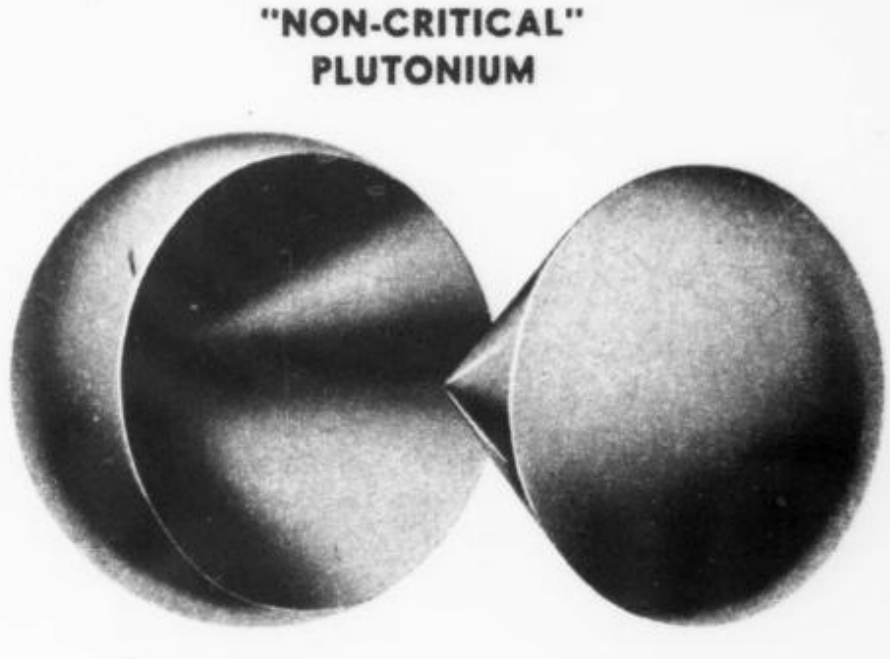
nuclei of atoms to fall apart. And the science which deals with the natural laws involved is called nuclear physics.

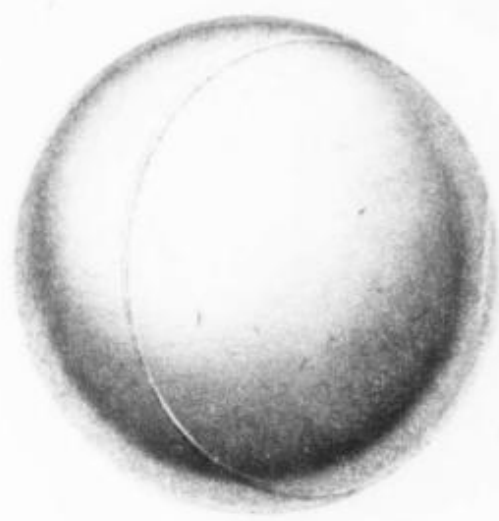
The knowledge that an atom can break up is just about forty years old; it began with Madame Curie and with radium. Up to that time it had been thought that an atom is the smallest possible particle of matter. Of course, it was known that the atoms of different elements were of different weight (and probably of different size), and that the atom of hydrogen was the lightest of them all. If you called the weight, or mass, of the hydrogen atom "1", then the oxygen atom had the mass "16", the atom of tin had the mass "119", and that of mercury the mass "200".

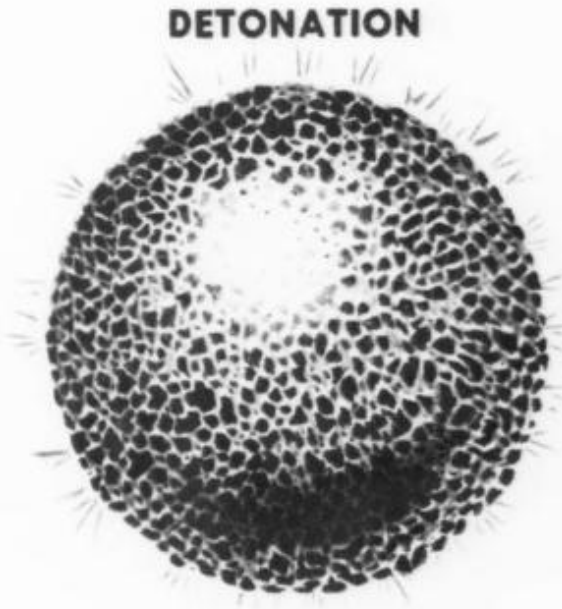
The mass of the radium atom was "226". The atom behaved in such a peculiar way that only one conclusion was possible: it decayed slowly, or fell apart. Since uranium (mass "238") also decayed, or was "radio-active," as it came to be called, it seemed logical to think that these atoms were probably too heavy to hold together indefinitely. Of course, that implied that there existed particles smaller than atoms, because if atoms did fall apart they necessarily had to fall apart into smaller units, building stones of the atoms, sub-atomic particles.

This was a highly interesting performance and scientists were eager to learn more about it. The first and obvious step was to try to find out whether the rate of decay of radium could be influenced in any way. It was tried with heat and cold, electric and magnetic fields, with every imaginable combination of these factors. The result was—zero. The rate of atomic decay was absolutely steady; it could not be slowed down; it could not be accelerated.

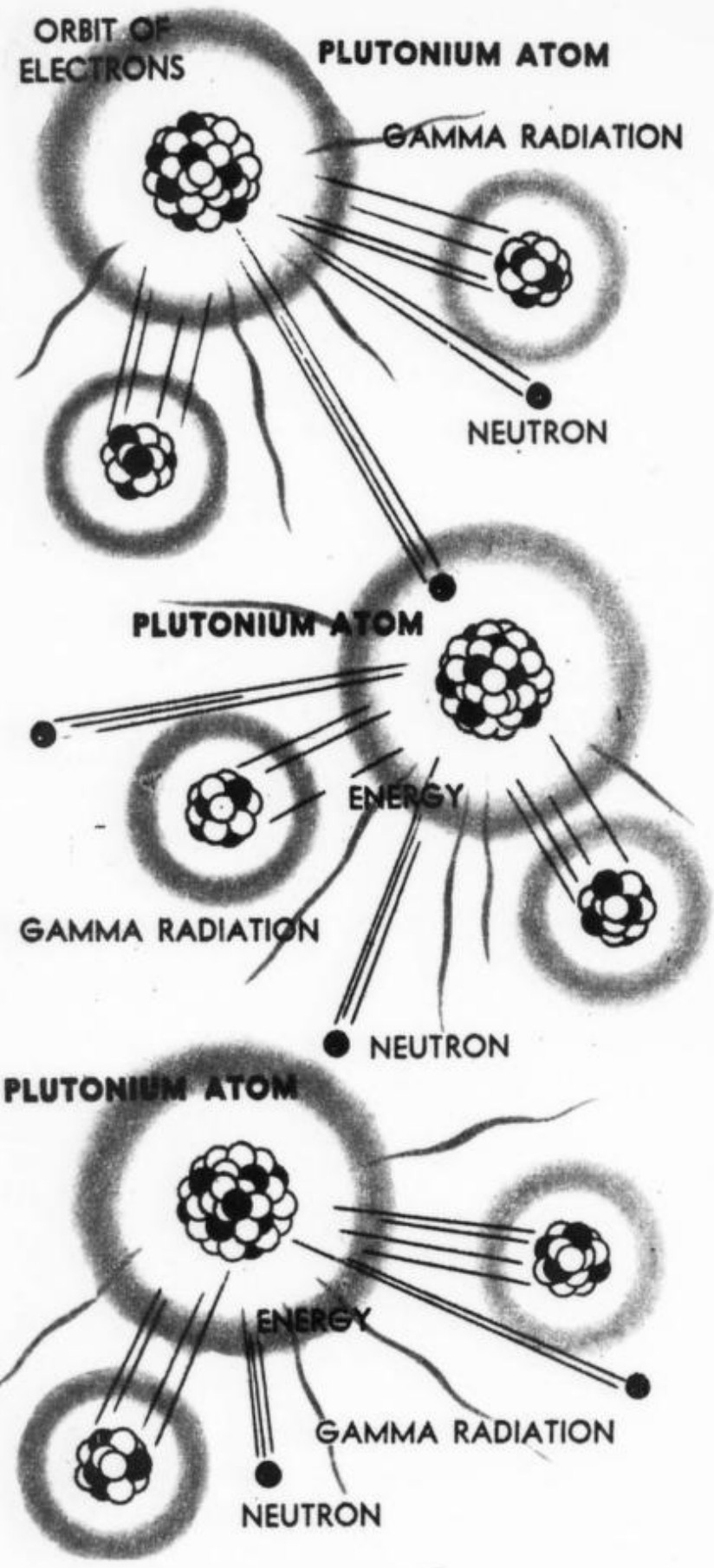
In the course of time new methods were thought up and tried, new methods involving, mostly, electrical machinery of some sort. It was tried to shoot subatomic particles at atoms in order to break them up. The results of these experiments, although they taught many lessons, were not exactly zero, but they weren't much better. Then, in 1939, something really new happened. Experimenters worked with uranium, which had two advantages. One was that its atoms were even larger than those of radium. The other was that







Small quantities of Plutonium are insufficient to cause detonation, but when one large mass (plug) unites with another (ball), explosive mass forms.



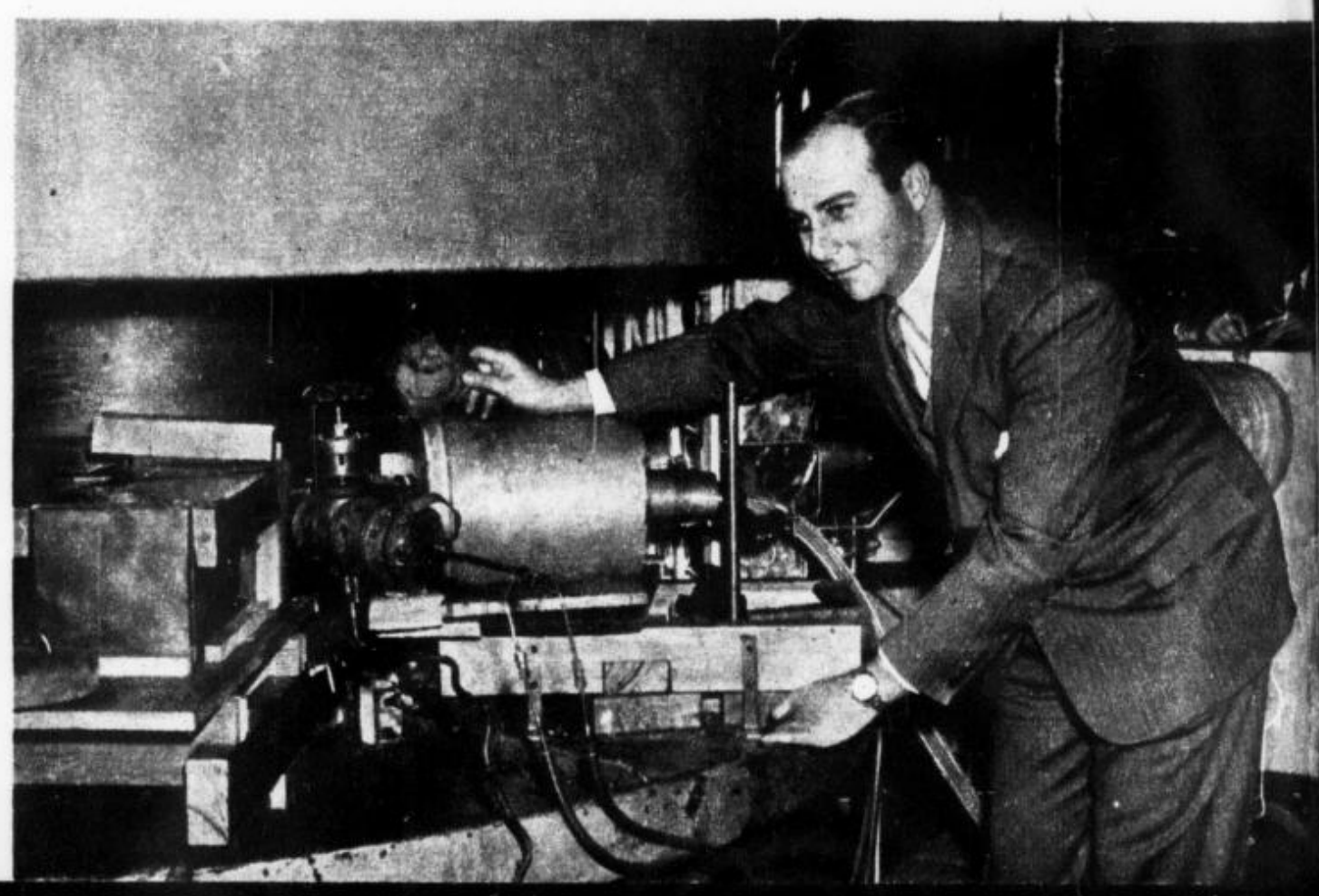
Chain reaction of Plutonium atoms is secret of explosion. Neutrons emitted by split nuclei bombard other nuclei and split them, etc.

on the atomic bomb) who suddenly found unexpectedly large energy releases. What was even more puzzling was that "new" elements made their appearance during the course of these experiments—not "new" in the sense that they were unknown (although that was believed to be the case at first), but in the sense that they had not been there before and should not be there.

Fermi's experiments were at once repeated by a team of German scientists, Doctors Hahn, Strassmann, and Meitner, with the same results. Fortunately for the Allies, Dr. Lise Meitner was exiled by Nazi Germany because of Jewish ancestry before the problem had even been solved. In spite of this blunder by the Nazis, our own atomic physicists knew all the time that they were racing Nazi science in the construction of the irresistible atomic bomb. By the time we conquered Germany it was believed that the Nazis would have had atomic bombs by the end of 1945; now it is known that they were about a year behind us in their research. Nevertheless, it was a close and desperate race—far too close for the peace of mind of Allied government officials and scientists.

But to go back to the story: for a while those experiments first made by Professor Fermi did not seem to make sense, but at last the solution was found (by Meitner): the heavy uranium atoms, under certain circumstances, broke into two halves of about equal weight: barium (mass "137") and Krypton (mass "84"), plus some small atomic [*Continued on page* 143]

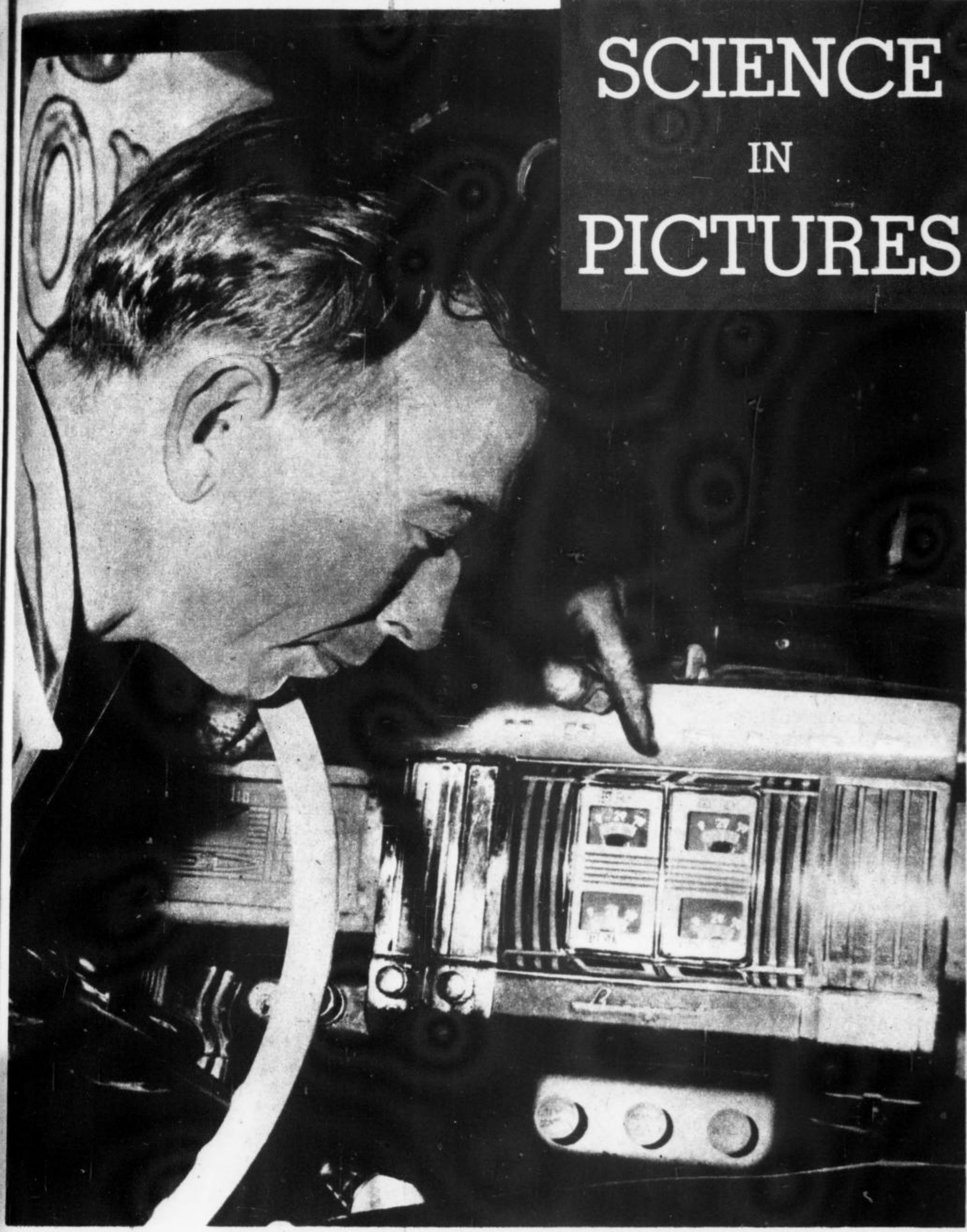
One of the first to split the Uranium atom was Dr. Dunning of Columbia Univ. Here he holds platinum his atom-smasher changes into gold.



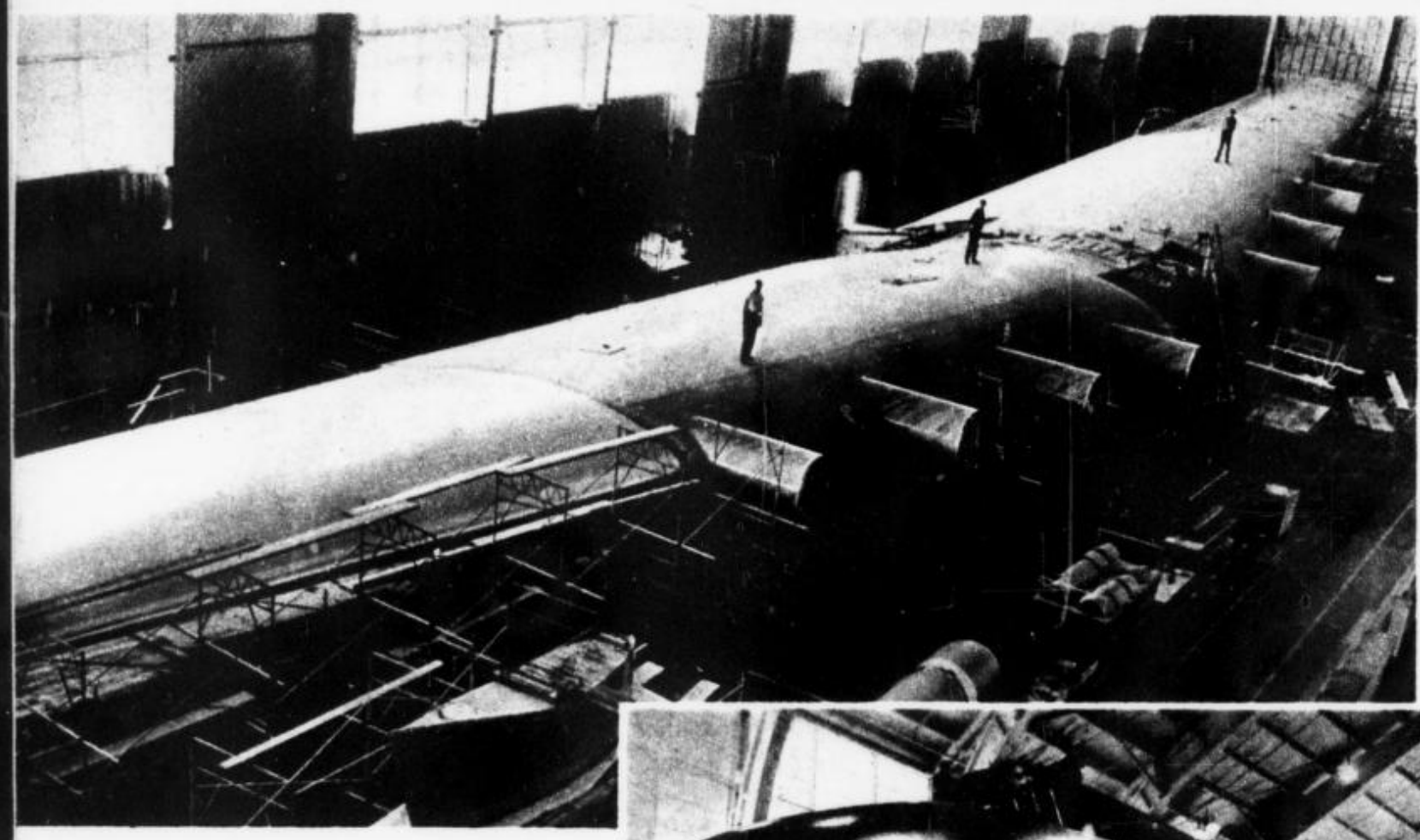
uranium does not command the fantastic prices that have to be paid for radium. In fact uranium was cheap enough to serve as a coloring matter in glass and ceramics.

The first discoverer of the strange behaviour of uranium was Enrico Fermi, an Italian physicist (now in this country and one of the scientists who did fundamental work

SCIENCE IN PICTURES



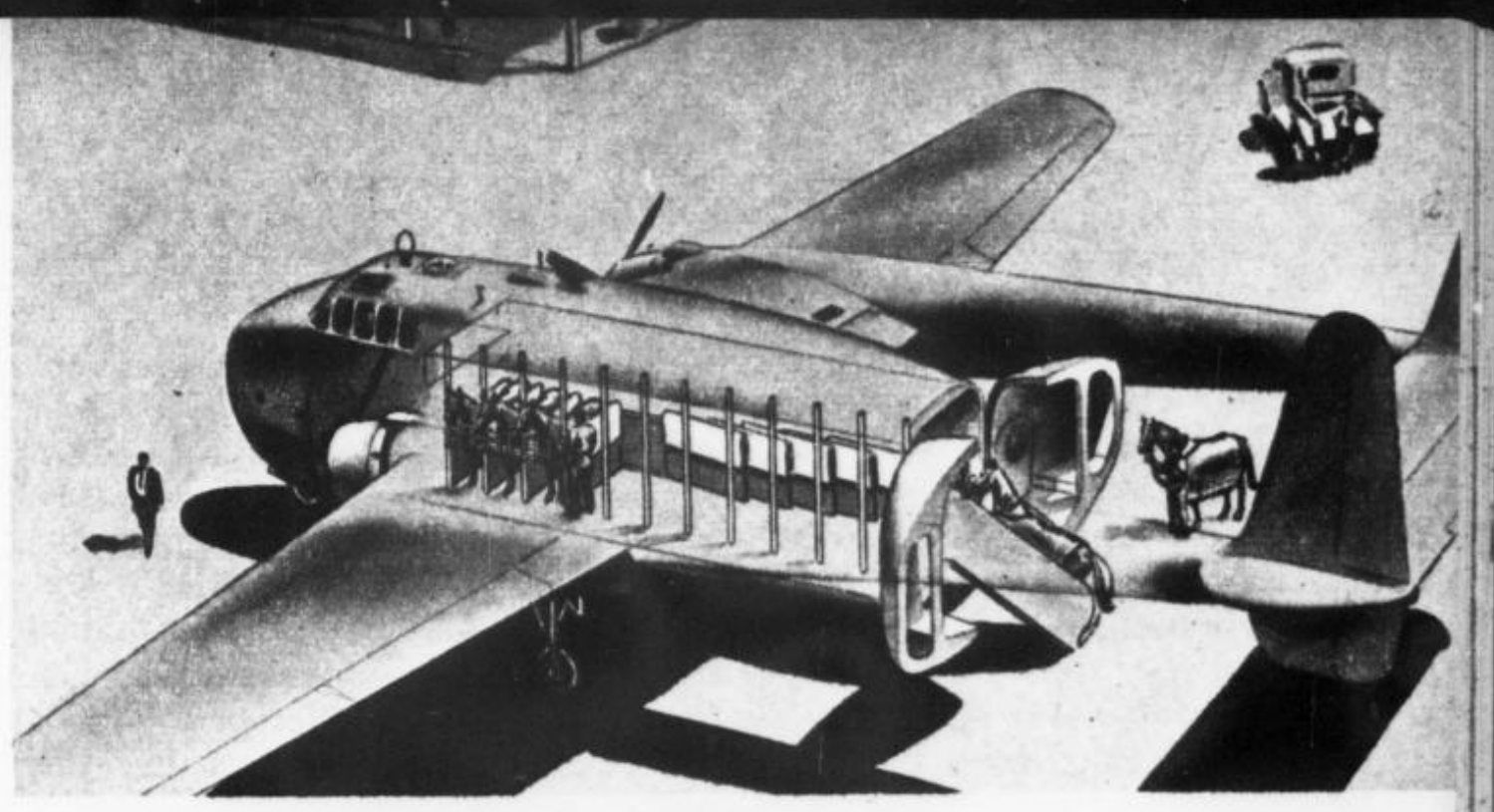
Gauge Shows Tire Pressure. The gauge has a dial for each wheel, and works as follows: A connection is added to the tire valve; air in the tire operates a gauge in the wheel. A collector ring carries current to a carbon brush with a spring. Brush transfers the current while the wheel is in motion.



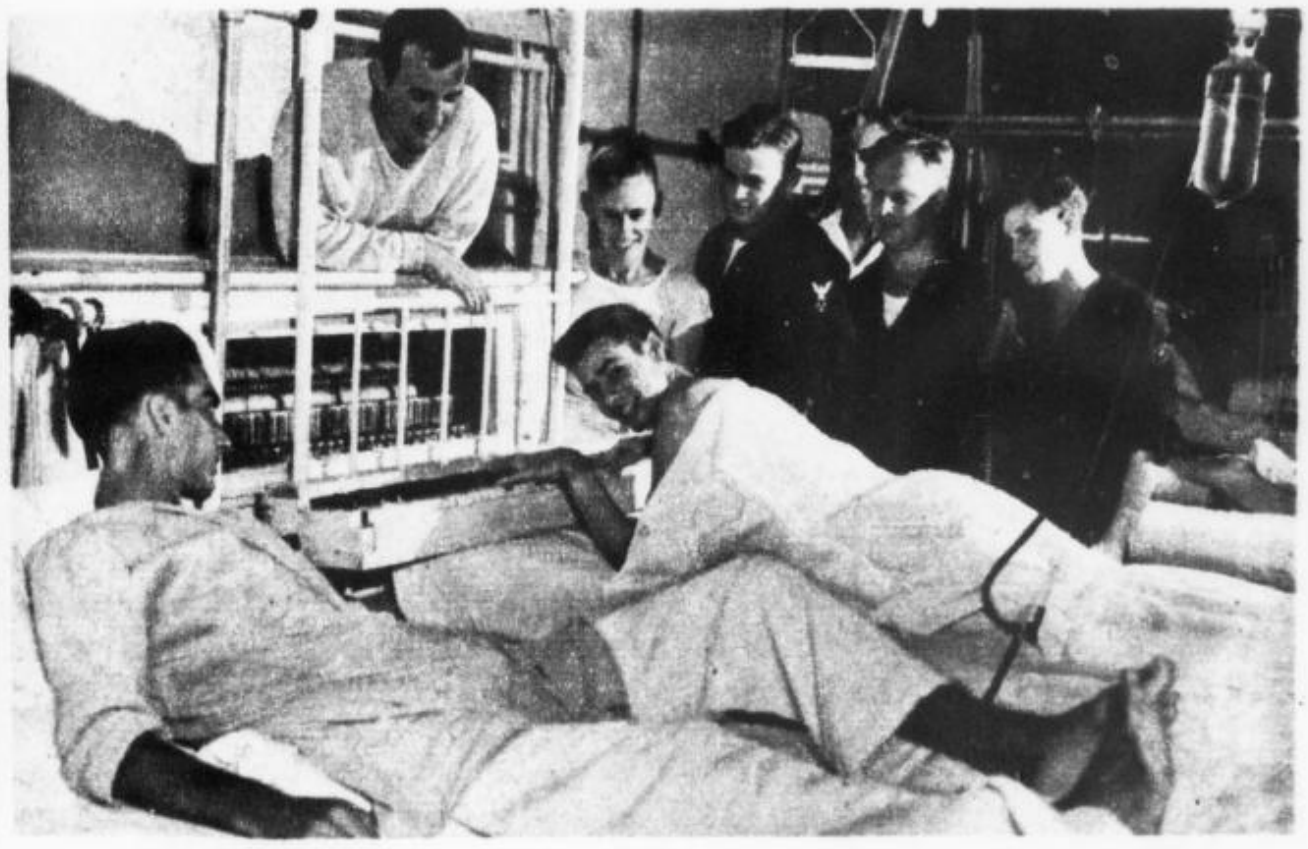
Hughes Hercules

is the name of a plane the builder claims is the largest one in the world. Photographs above show the new air monster under construction; the drawing below of this aircraft appeared in the October, 1943 issue and was prepared by staff artist Fred Ripperda according to advance information.

Built entirely of wood at an approximate cost of $20,000,000 the plane has a wing span of 320 feet, and the hull is 220 feet long, 30 feet wide, and 25 feet high. Total gross weight of 200 tons plus will be heaved into the air by 8 engines of 3,000 horsepower each.



Flying Van for horses will be a new boon for owners who want to enter their animals in races across the country. The drawing shows how eleven horses might be accommodated in separate stalls in new Fairchild Packet.

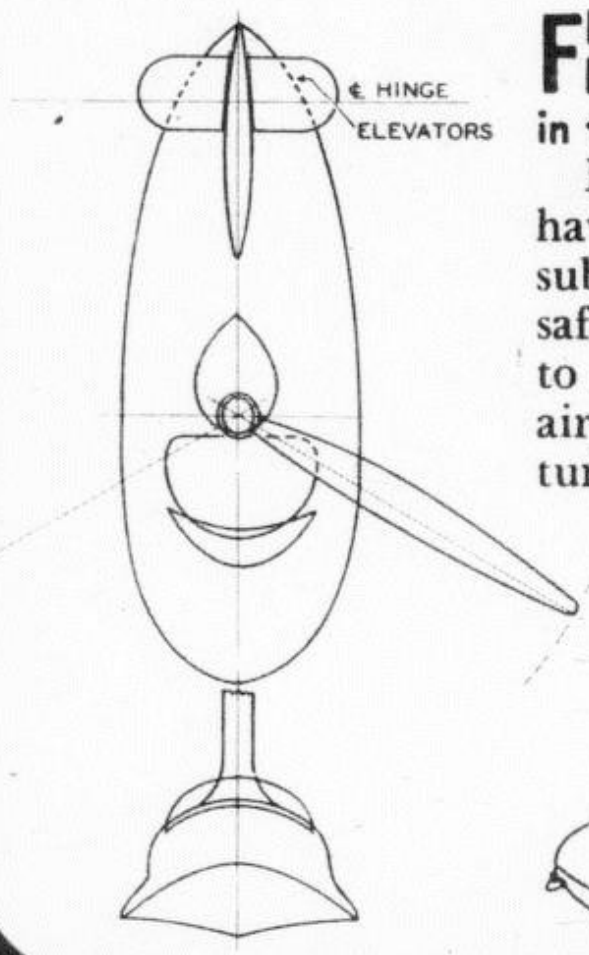


Bed Piano is an idea to toy with if you would like to play the piano while reclining among the pillows. The one shown here was specially built for AMM 3/c Alan C. Wagner, paralyzed from the waist down by wounds suffered near Iwo Jima. A portable keyboard is attached electrically to an upright piano.

Package Inspector operated by X-ray reveals contents of packages GI's send home from overseas, makes possible detection of illegally sent military equipment without opening packages. Packages are put in machine by one operator, while other watches.

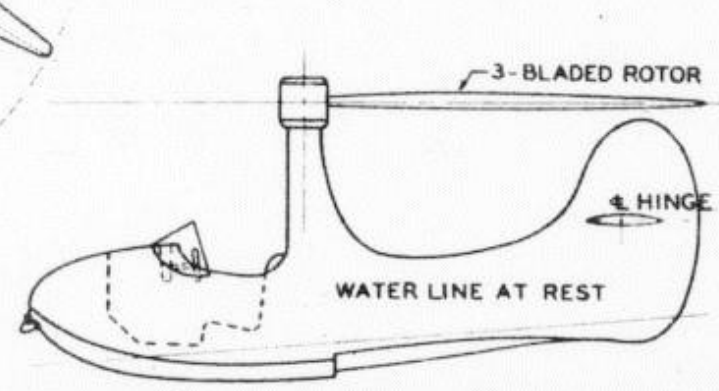
GYRO CARS FOR FUN

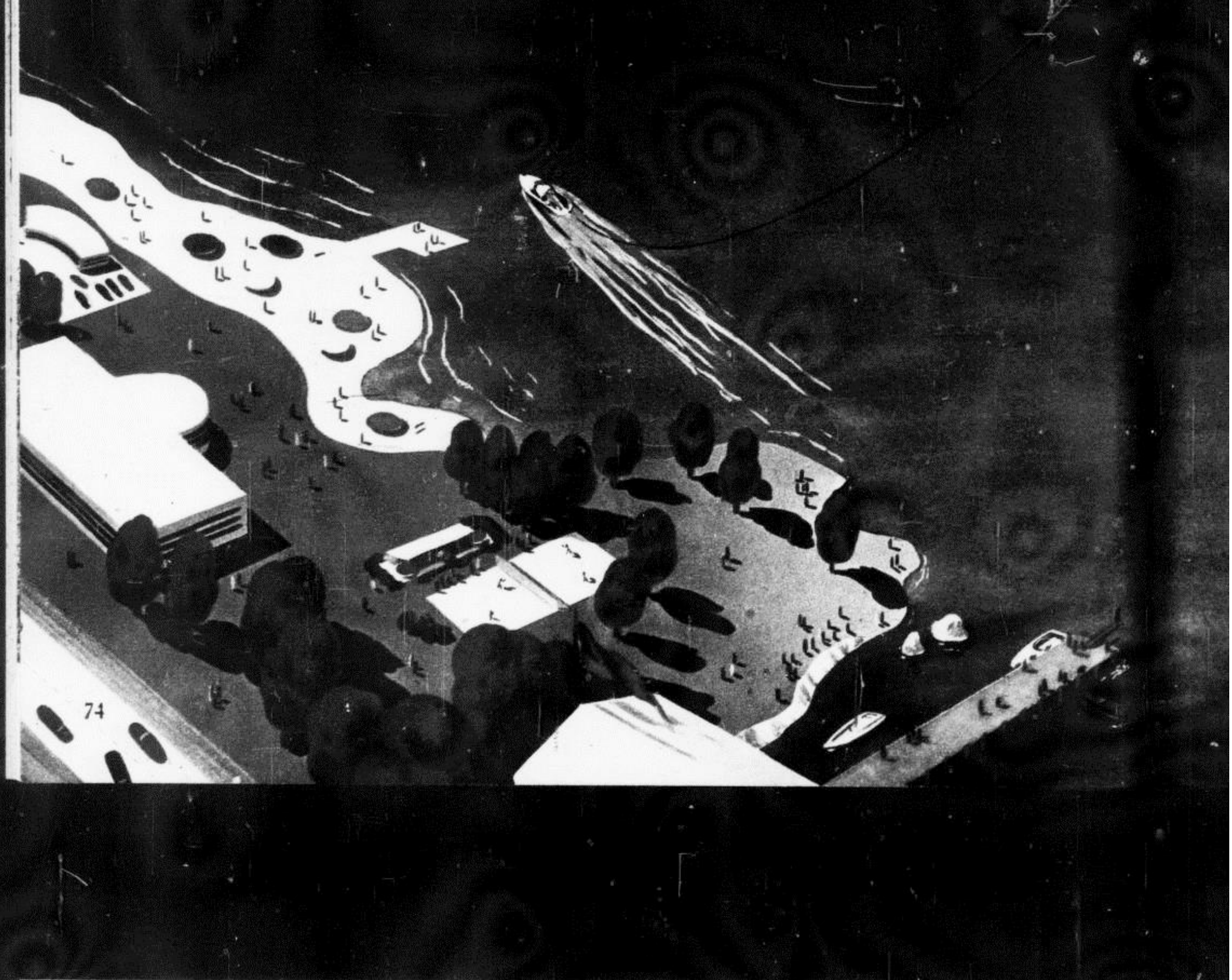
BY ED YULKE

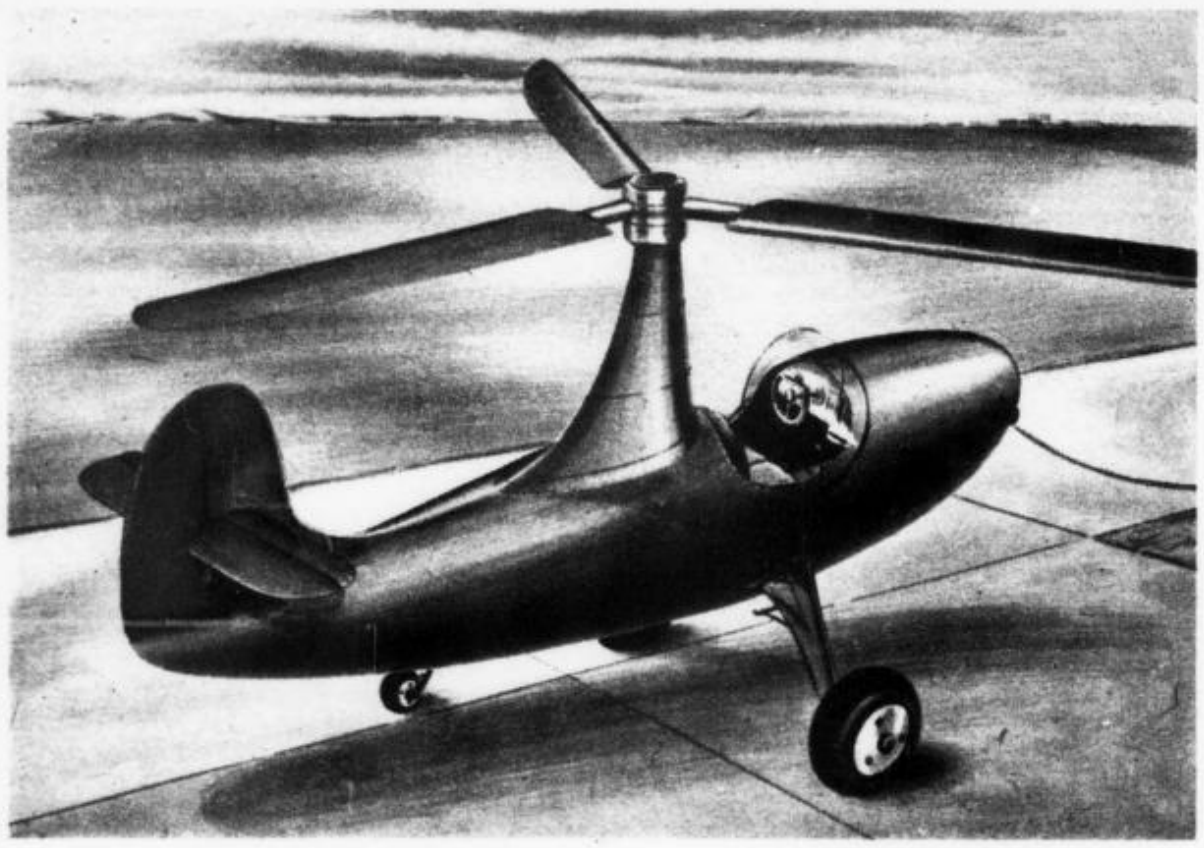


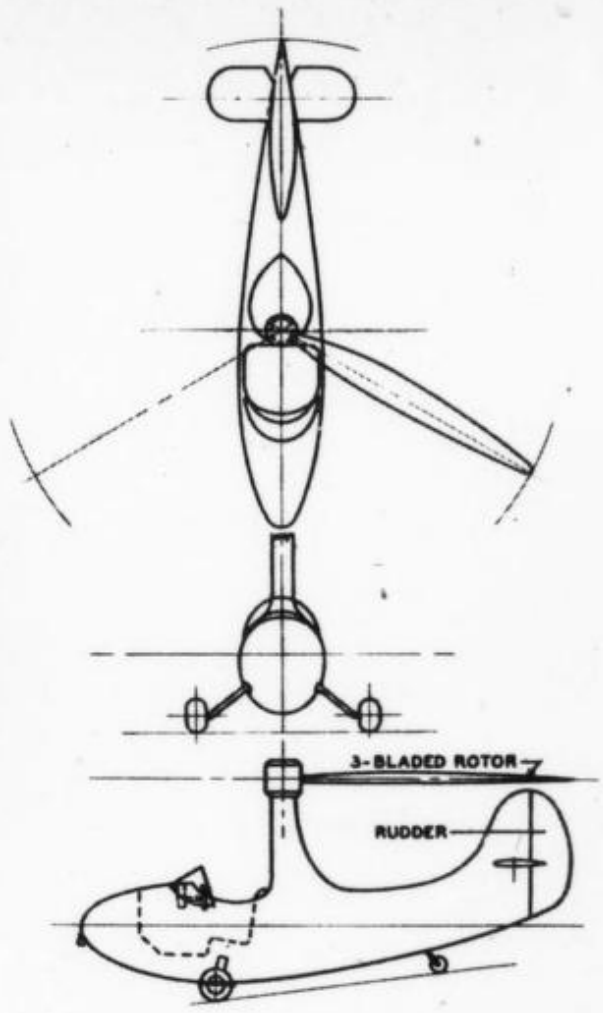
FLYING a motorless autogyro is a brand new thrill which awaits you in the postwar age.

Based upon a device the Germans have used for spotting prey for their submarines, the gyro car is absolutely safe and yet enables its passengers to enjoy all the sensations of a real airplane ride. No motor is needed to turn the rotors, since, as in the auto-







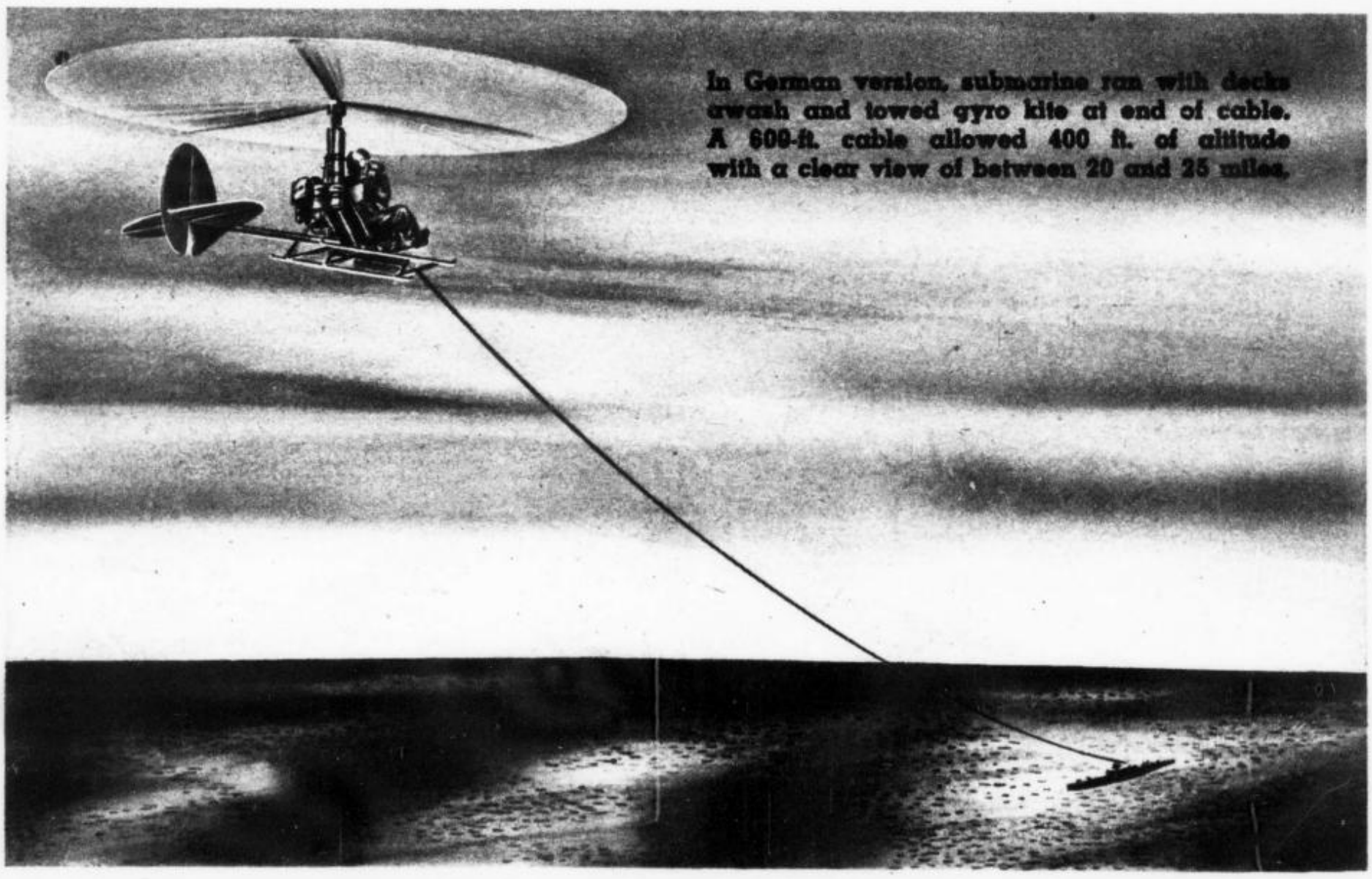


Land version of gyro car with silhouettes shown at right. It can be towed by car or motorcycle along open road or track.

gyro, the rotors are turned by the action of the air striking the lower portion of their blades. Construction is simple and cheap. All lift is derived from the forward motion of the towing boat or car which causes an airflow past the rotors.

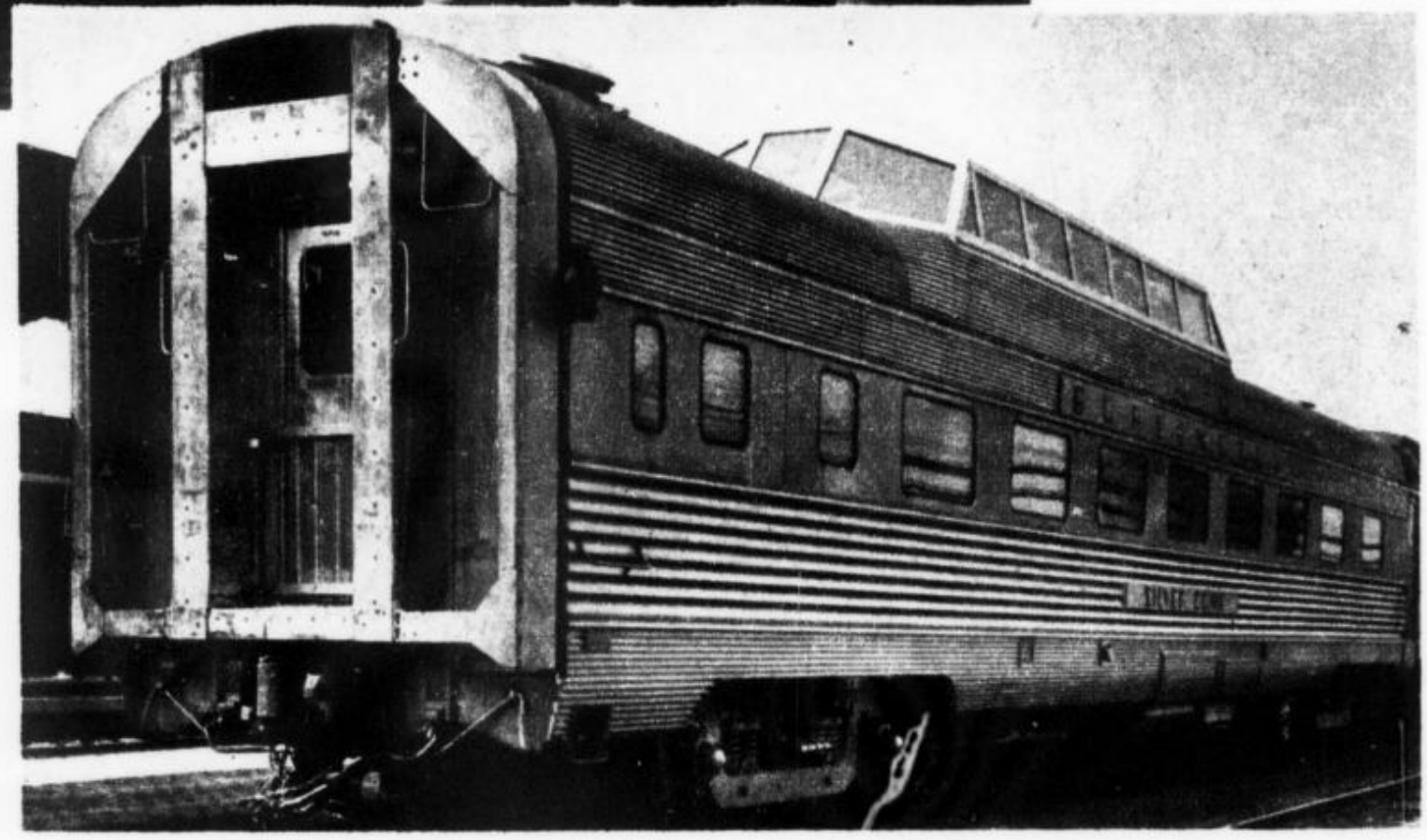
Since safety is the prime requirement of such an amusement device, suppose we look into the design itself from the aerodynamic slant. The rotor is designed so that the craft settles at no more than six feet per second, half the rate of descent of a parachutist. The landing is a lot less rough than many of the rides now in existence. Elevator control, by means of a wheel on the panel in the cockpit which can be pushed or pulled, allows the "pilot" to nose the gyro car up. Since the car is always attached to the end of the towing cable, the result is that the car can climb with the cable limiting the amount of height that can be obtained.

The car is designed so that it can never climb directly over the towing vehicle, since this would allow the cable to slack off and cause a jerk when the slack is picked up again. Nosing [*Continued on page* 148]



In German version, submarine ran with decks awash and towed gyro kite at end of cable. A 600-ft. cable allowed 400 ft. of altitude with a clear view of between 20 and 25 miles.

"Vista Dome" is the name the Burlington RR has given its new coach car, which made its first run on July 23rd. Drawings of the new car, which seats 24 passengers in the dome, appeared in the September MI.



Anti-Bug spray of war-famed DDT, powerful insecticide that saved the health and lives of our troops in the Pacific, is tried at Jones Beach. The occasion was the first public test of an insecticidal fog applicator developed by the Todd Shipyards Corporation.

PV-3 is the world's largest helicopter. Built under Navy direction, it will be used for air-sea rescue work by Navy and Coast Guard. It's the first transport type helicopter.

A FAWCETT PUBLICATION

MAY

MECHANIX ILLUSTRATED

now 10¢

AIN LIB
REFERENCE
2nd FLOOR
'39

STRANGE WAR PLANES
SEE PAGE 41

BUILD THIS MODEL • PAGE 64

THIS MAGAZINE GUARANTEED!
atisfaction or *Double* Your Money Back • See Page 4

HOW GOOD-LOOKING ARE *you* ON THE BEACH?

SKINNY? HERE'S HOW THOUSANDS GAIN A NATURALLY ATTRACTIVE BUILD

Posed by professional models

THIN, TIRED, NERVOUS PEOPLE OFTEN GAIN 10 TO 25 LBS., NEW PEP —*QUICK*

HERE'S the best news ever told for thousands of skinny, tired, washed-out men and women who are almost ashamed to be seen in a bathing suit—people who can hardly eat, sleep or work—people who are so weak and weedy-looking, so nervous and cranky they've almost lost all friends.

Now they can easily gain naturally attractive pounds, new pep and popularity often in just a few weeks—by taking these pleasant little Ironized Yeast tablets.

And it's easy to understand. Scientists have discovered that hosts of people are thin, rundown and nervous simply because they don't get enough Vitamin B and iron from their daily food. Without these vital substances you may lack appetite and not get the most body-building good out of what you eat.

But now you can get these exact missing substances in these easy-to-take little Ironized Yeast tablets. And the improvement they make in a short time is often astonishing. Thousands have gained 10 to 25 pounds of naturally good-looking flesh in just a few weeks. Their tired feeling and nervousness seem to have just flown away. They're full of pep, look like new persons, and are more popular and happy in every way.

Make this money-back test

Get Ironized Yeast tablets from your druggist today. If with the first package you don't eat better and FEEL better, with much more strength and pep—if you're not convinced that Ironized Yeast will give you normally attractive flesh, new energy and life, the price of this first package will be promptly refunded.

Only be sure you get genuine Ironized Yeast, and not one of the cheap, inferior substitutes often offered which do not give the same results. Be sure to look for the letters "IY" stamped on each tablet.

Special offer!

To start thousands building up their health right away, we make this special offer. Purchase a package of Ironized Yeast tablets at once, cut out the seal on the box and mail it to us with a clipping of this paragraph. We will send you a fascinating new book on health, "New Facts About Your Body." Remember, results with the first package—or money refunded. At all druggists. Ironized Yeast Co., Inc., Dept. 565, Atlanta, Ga.

TUNE IN ON THE GOOD WILL HOUR, every Sunday Evening. Your newspaper gives time and station.

MECHANIX ILLUSTRATED

W. H. FAWCETT
Publishers

Vol. XXII
No. 1

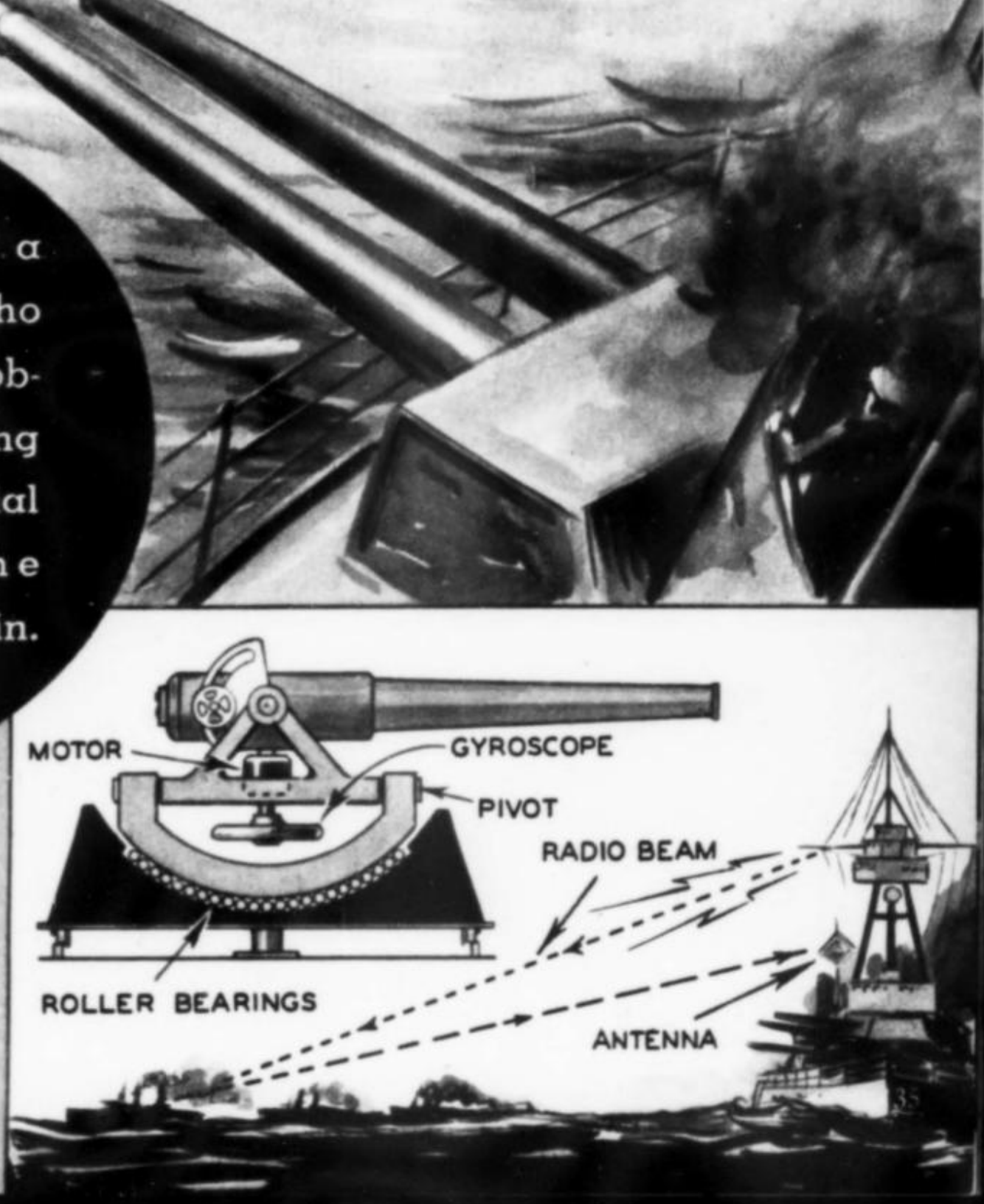
May
1939

Inventor, Incorporated

by
Stanley Gerstin

WHAT should the inventor do until the money starts coming in? This is a serious question that has stumped many inventors. But here is the story of one who licked the problem. He is Kenneth P. Hogan, of Philadelphia, an ingenious inventor who got himself incorporated. Three men put up dough for the corporation and sent the inventor into a huddle with himself to invent something. As quickly as Hogan conceived an idea it was designed, patented and sold to a manufacturer. Hogan doesn't have to worry

This is the story of a unique inventor who licked his money problems by incorporating himself to win financial backing until the money starts rolling in.



The drawings on this page depict an idea of Inventor Hogan's for a gyro-type gun-mount for battleships. The mechanism is designed to hold the guns at the angle at which they are pointed, regardless how violently the ship rocks. His special gun-mount is supplemented by a unique range and distance finder employing short radio waves. Read story for working details.

Strange War Planes

TECHNOLOGY

MECHANIX ILLUSTRATED

ST. PAUL PUBLIC LIBRARY
APR 1 1946
RECEIVED

APRIL

A Fawcett Magazine

REAR-WING
PUSHER AIRLINER
SEE PAGE 60

ATOMIC ENERGY TO FIGHT CANCER

BUILD A CONTROL-LINE MODEL MUSTANG

MECHANIX ILLUSTRATED

Title registered U S Patent Office

W. H. FAWCETT Jr.
President

ROGER FAWCETT
General Manager

RALPH DAIGH
Editorial Director

ROBERT HERTZBERG
Executive Editor

Co-editors: ROLAND CUEVA, GILBERT PAUST

Associate Editors:
Harry Bates ..... *Features*
Cliff Taylor ..... *Science in Pictures*
Larry Eisinger ..... *Crafts & Hobbies*
Robert Brightman ..... *Photography*
Jo McCallion ..... *Production*

APRIL, 1946

VOL. XXXV NO. 6

ST. PAUL PUBLIC LIBRARY
APR 1 19[illegible]
RECEIVED

On the cover: *MI artists' conception of the coming canard-type airliner*

SPECIAL FEATURES

ATOMIC MEDICINE—*by Willy Ley* 41
Radioactive "tracers," the latest weapon of pathological research

STACK 'EM UP! 44
Fog-bound, "stacked" high in the sky, the airliners wait their turn to come down

ROBOT RAIDERS—*by James Nevins Miller* 47
Self-guided aircraft missiles, harbingers of the pilotless weapons of the future

MI TESTS THE NEW CARS—*by Tom McCahill*
Performance tests of the '46 models
OLDSMOBILE 52
PACKARD 54

GOERING'S FOLLIES 56
Weird planes dreamed up by the desperate Germans

ON THE LORAN LINE 58
The magic new system for air navigation

THE "PUSHMASTER"—*by Ed Yulke* 60
A preview of the coming "plane that flies backward"

A DOC'S HOBBIES—*by Louis Hochman* 62
The cranial effervescences and very practical inventions of the tireless Doc

ROCKET ENGINE 65
The first rocket power plant

GAS! 66
We were ready to fight a chemical war—if!

TAKE THE AIR! 68
What do you know about the atmosphere we live in?

PLASTIC FURS 70
By a plastic process sheepskins are turned into "mink" coats

SCIENCE IN PICTURES 71

SHE SELLS SEA SHELLS—*by E. J. Murray* 81
An artist whose medium is marine shells

TIRE TALES 86
A photo-story on the making of synthetic rubber

MAGIC GARDEN 88
Chemicals create fantastic aquarium gardens

PROSIT 90
How your beer gets that way

STYLES IN ROTORS 92
Two new helicopters you will like

BANGTAILS ON THE RECORD 94
Horse racing's Performance Observer System

PLASTIC HOME 95

CRAFTS AND HOBBIES

CONTROL-LINE P-51—*by Larry Eisinger* 96
A 32 in. gas model of the famous Mustang

EASTER NOVELTIES—*by Roberta L. Fairall* 102
Fun with eggshells

HOME AND SHOP IDEAS 104

KEEP YOUR SCYTHE IN SHAPE 106

THREE TOYS AND CLARABELLA 108

TOOL POST GRINDER 110

PLASTIC WHAT-NOT 113

LATHE MILLING ARBOR 114

KNOW YOUR MEASURING TOOLS— 116
Pointers on calipers, gauges, and squares

NO HOUSING SHORTAGE HERE 120
Modern bird houses for our feathered friends

MODEL STEAM ENGINE 121
A single action high speed job

NEW PRODUCTS 126

CAR CARE—*by Frederick C. Russell* 128
First aid to the motorist

CIGAR BOX RADIO 130
A miniature crystal set

GARDEN GATEWAYS 132

TWO SEATER FOR THE GARDEN 134

MONTHLY PHOTO CONTEST 135

DOUBLE DUTY FOR YOUR CAMERA LENS 136
Fitting a still camera lens to a movie camera

AUTOMATIC PRINT TIMER 138

CUSTOM BUILT CAMERA CASE 139

MOVIE FILM CLEANER 140

PHOTO KINKS 141

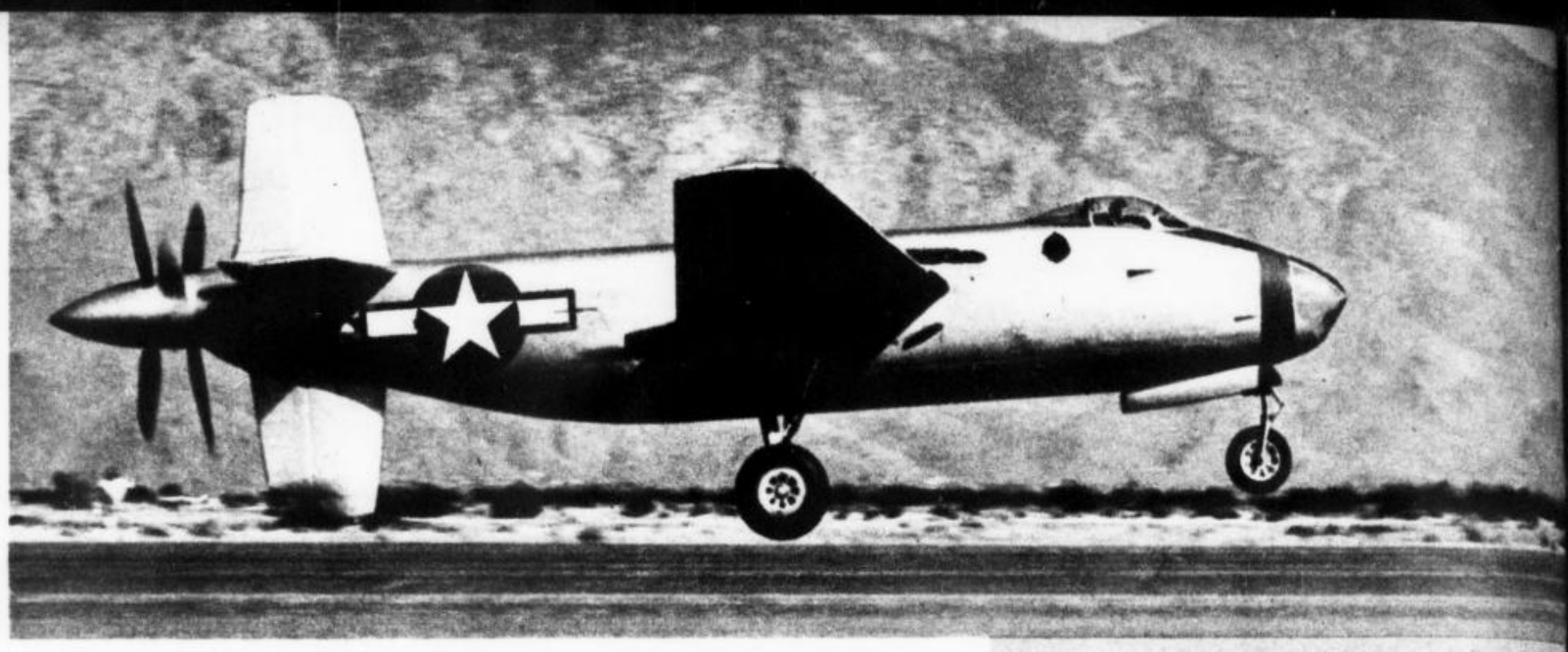
THE QUESTION BOX 141

BOATS AND BOATING—*by William F. Crosby* 142
This month: Chine construction

Copyright 1946 by Fawcett Publications, Inc.

MECHANIX ILLUSTRATED is published monthly by Fawcett Publications, Inc., 1100 W. Broadway, Louisville 1, Ky. Printed in U. S. A. Advertising Offices, 295 Madison Ave., N. Y. 17, N. Y. Editorial Offices, Paramount Building, 1501 Broadway, New York 18, N. Y. West Coast Representatives; Los Angeles, H. P. Houston, Edward S. Townsend Co., Pacific Mutual Building; San Francisco, Edward S. Townsend, Edward S. Townsend Co., Russ Building. General Offices, Fawcett Building, Greenwich, Conn. Elliott D. Odell, Advertising Director; Roscoe K. Fawcett, Circulation Director; Allen E. Norman, Secretary; Gordon Fawcett, Treasurer; Al Allard, Art Director. Entered as second-class matter at the post office at Louisville, Ky., under the act of March 3, 1879. Additional entry at Greenwich, Conn. Copyright 1946 by Fawcett Publications, Inc. Reprinting in whole or in part forbidden except by permission of the publishers. Title registered in the U. S. Patent Office. Address manuscripts to MECHANIX ILLUSTRATED, 52 Wall St., New York 4, N. Y. All remittances and correspondence concerning subscriptions as well as notification of change of address should be addressed to Circulation Department, 22 West Putnam Avenue, Greenwich, Conn. Not responsible for lost manuscripts or photos. Unacceptable contributions will be returned, if accompanied by sufficient first class postage. Price 15c per copy. Subscription price $1.80 per year in U. S. and possessions. Canadian and foreign subscriptions $2.00 per year. Foreign subscriptions and sales should be remitted by International Money Order in United States funds, payable at Greenwich, Conn. Advertising forms close fifth of second month preceding date of issue.

MEMBER AUDIT BUREAU OF CIRCULATIONS



The Mixmaster, shown above, suffered engine failure and crashed on a testing flight.

THE "PUSHMASTER"

The ill-fated Mixmaster was a step toward developing the Pushmaster, a canard-type pusher that will make air travel faster, cheaper.

"THAT plane on the cover's not flying backwards, mister—it's a canard!"

The Mixmaster, Douglas' latest contribution to transport plane design, is a sure, clear step in the direction of the coming canard or "tail-first" airplane.

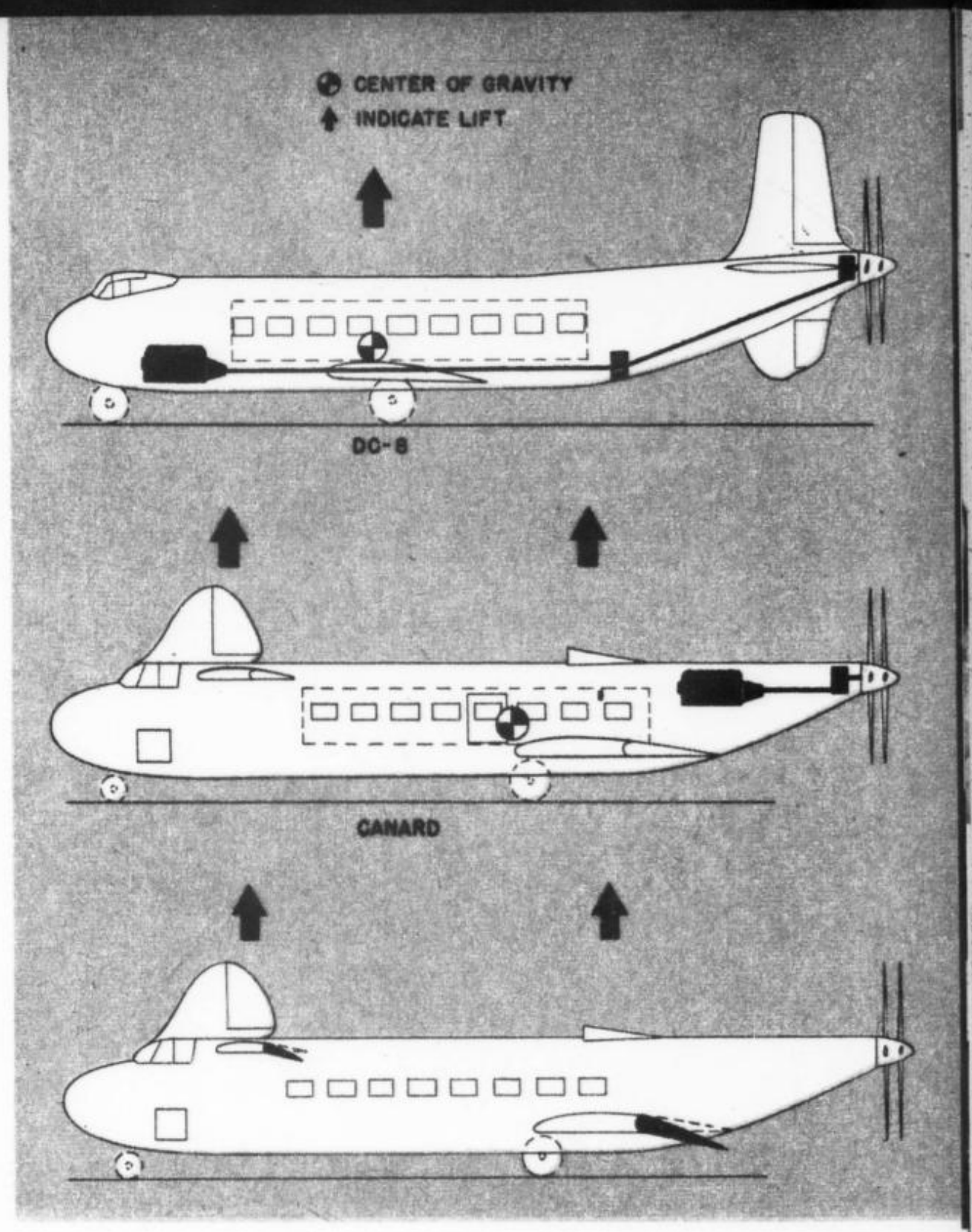
The evolution is inevitable. Putting the tail in front increases the cruising speed, reduces operating cost by eliminating the drag of the engine nacelles, and allows an increase in payload.

Earlier models have the engines up front, while the propellers are on the other end of the plane, aft of the tail surfaces. Such design was necessary because of the conventional wing and tail arrangements and the requirements of balance. Putting the engines in the tail would have eliminated the drive shafts but unbalanced the ship, or else required moving the passenger cabin forward. Since passenger weight varies widely, such a plane would have been difficult to trim.

The pure canard design—shown in the "Pushmaster" on the cover—has the wing aft, the stabilizer and vertical tail up forward; the center of gravity is aft near the leading edge of the wing, and this allows placement of the engines back near the props, saving the weight of the shafting.

Airline officials estimate weight to cost them between 50 and 100 dollars per pound per year—so you can see that this is an important consideration.

The Pushmaster will look even more unorthodox than the Mixmaster but will have none of the latter's faults.



Top drawing shows heavy shafting made necessary by conventional placement of wings in Mixmaster. Canard Pushmaster (center) has main wing in rear. Bottom sketch illustrates how both main flaps and elevators act as air brakes to slow the fast plane.

Both the Mixmaster and the pure canard design offer many advantages over the older transport types. In both, propellers in the rear keep the source of most noise aft of the cabin, reducing the need for soundproofing. In both, the engine nacelles on the wings are eliminated, reducing drag 20 per cent and giving higher cruising speed and lower operating cost—and lower fares.

Aviation engineers have long predicted that we will eventually travel in huge flying wings that tear along at terrific speeds. They predict that by eliminating the fuselage and tail surfaces and by burying the engines in the wings, drag will be lowered to such a degree as to make present day "advancements" appear minute.

Probably, planes will develop toward flying wings in easy stages. While airfoil sections for such wings are not completely stable, we'll still have stabilizing surfaces, either in back as tails or in front as in the canard design.

The new Mixmaster is the first stage.

The canard, the next stage, will have advantages over the Mixmaster. In pure canard design the stabilizer is also a lifting wing; and since part of the lift necessary to hold the plane up can be obtained there, the main wing can be smaller. This means another reduction in drag and cost of operation, and an upping of cruising speed.

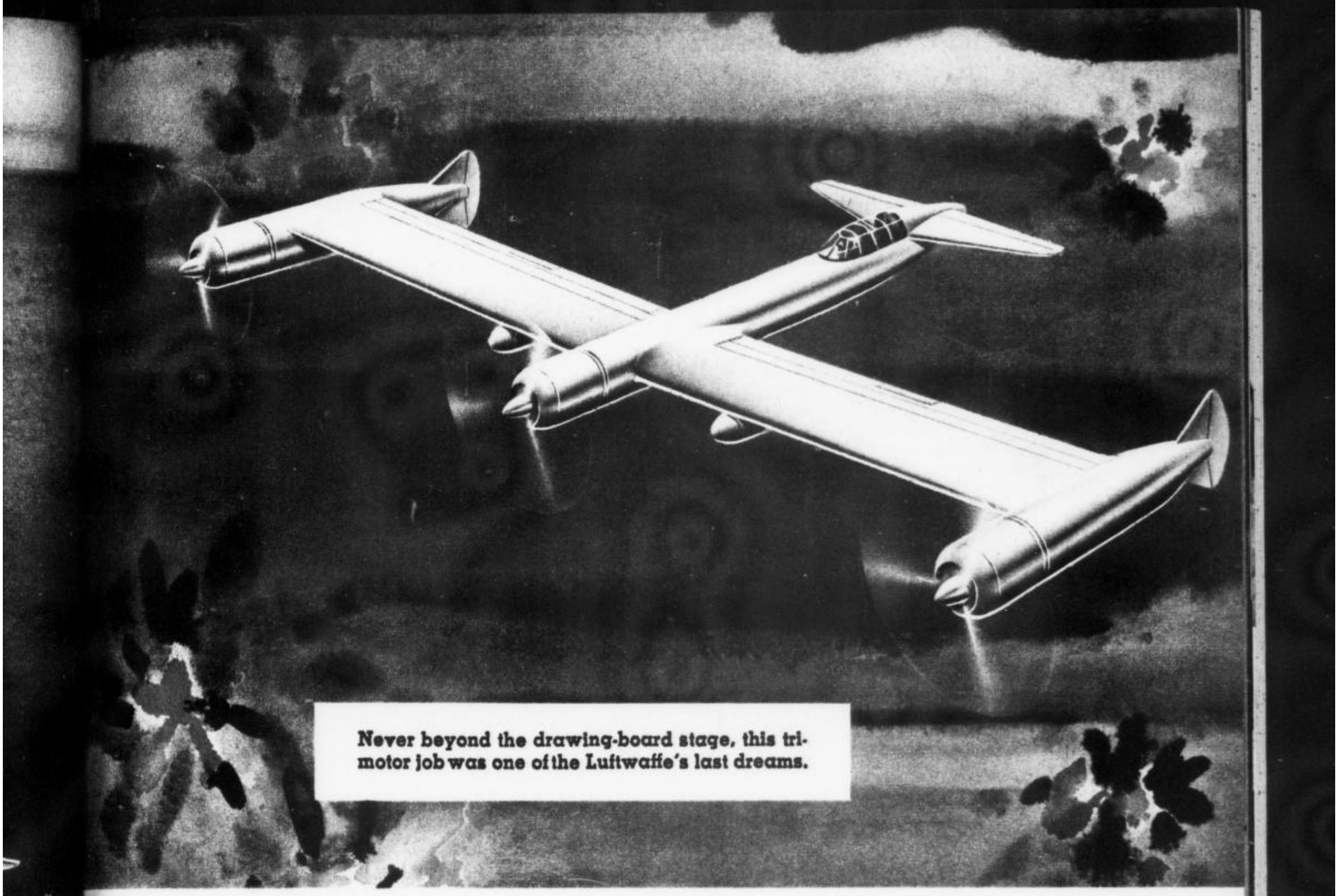
The ultimate goal of aircraft designers is to make every part of the airplane contribute to lift. The conventional plane has a "parasite" tail, and the non-lifting stabilizer contributes only to control.

Canards will also provide another means of slowing the high-speed airplane down to a safe landing speed. In conventional designs, flaps are used to increase the lift of the wing alone; in canards the lift is distributed between the main wings, so that it would be a simple matter to have the entire trailing edge of the main wing swing downward to act as a lift-increasing flap while the elevators, depressed, balance the plane by giving lift to the forward wing. The flaps could be connected to operate together on both wings, leaving a single control for the pilot as in conventional planes. Normal [*Continued on page* 154]

Goering's Follies

BY CLIFF TAYLOR

Its dying days saw Herman's Luftwaffe ready to try anything and everything at least once.



Never beyond the drawing-board stage, this tri-motor job was one of the Luftwaffe's last dreams.

WHEN it became evident to the Nazis that only a miracle could save their mortally wounded Luftwaffe they began to work on miracles. No other nation was so willing to try new theories of aerodynamics and plane design because no other nation was so goaded by necessity as were the Germans. The three planes illustrated on these pages are but a few of the many that were being planned by German designers when the war ended.

At the top of the opposite page is a giant four-jet bomber resembling a prehistoric pterodactyl with wings that sweep backward from the fuselage and then forward to the wing-tips. The idea behind this elbow-shaped wing evidently was to combat the loss of lift due to shock wave at tremendous speeds on the theory that if the wings were shaped similarly to the shock wave angle the loss would be lessened. How this theory would have resulted in practice is as yet unknown, for the plane never got beyond the blueprint stage.

Below it is the "Hammerhead," which was to have carried the pilot in one wing-tip nacelle, an engineer-navigator in the fuselage and front and rear gunners in the other wing-tip nacelle. Designed to achieve the greatest possible field of fire, the weird-looking craft was to have been powered by one air-cooled engine in the fuselage driving two contra-rotating propellers.

Somewhat similar in design, the plane at the top of this page was planned to have three engines, one at each wing-tip as well as the center engine in the fuselage. The aim of this unorthodox design was to decrease wing-tip spillage and also to effect a better type of engine distribution.

Just what these designs might have meant for the Luftwaffe had they reached the production stage is problematical, but it is doubtful if any one or all of them would have changed the war's outcome.

BRIDGEPORT PUBLIC LIBRARY
REFERENCE
JUN 17 '55

MECHANIX ILLUSTRATED

THE HOW-TO-DO MAGAZINE

WIN A FORD THUNDERBIRD! BIG CONTEST!
Plus Thousands of Dollars in Other Great Prizes!

How to buy a good air-conditioner...
Confessions of a used-car dealer...
Photo gallery of world's finest yachts

25c
JULY

Mechanix Illustrated

A FAWCETT PUBLICATION

JULY 1955

SPECIAL FEATURES

America's Sunday Punch ..... *Col. Bernard C. Rose* 49
Confessions Of A Used Car Dealer ..... *Pat Antonio* 57
Your Life Is In Your Hand ..... *Muriel Stafford* 70
Cover: Atomic Sub Launches Atom Raider 74
Money Grows In Your Garden ..... *Irv Lieberman* 78
Win A Ford Thunderbird In MI's Exciting Buildwords Contest 82
Now You Can Patch Steel! ..... *James E. Payne* 92
Profits In The Sky ..... *Tom Reed* 116

TOM McCAHILL

Exposes The Secrets Of The Hop-Up Experts 102
Tests The Packard Clipper 106
Mail For McCahill 196

REGULAR FEATURES

MMI: The Coffee Break ..... *Jack Kemmerer* 64
Inventions Wanted! 68
It's New! 96
This Month's Bright Idea: Window Washer 100
Pin-Up Car 110

SHORT FEATURES

Death On Wings 54
The Eye Has It 56
Taking The Curves/Cutting A Rug 60
Push-Button Farm 61
How *Not* To Get Poison Ivy 62
New Bus Rides The Rails 69
10-In-1 Speedster 76
Medical Miracle/New Rotochute 94
Half A Car Is Better 95
The Poor Fish! 101
Foil Toil 111
A Guy Can Dream, Can't He? 112
Meet The XP-4-DX-E-HP 119
This Is Golf? 122

DEPARTMENTS

The Editor's Workbench 10
Invention Clinic 16
Dear Editor 20
Science Shorties 25
Question Of The Month 26
Patents Granted 29
Hot Rods And Custom Cars: Competition Events You Can Enter 204
Hunting And Fishing: Crows: Decoyed, Baited And Stalked 206

(*continued on page* 6)

Cover painting by Gurney Miller

W. H. FAWCETT, JR. president
ROGER FAWCETT general manager
ROSCOE K. FAWCETT circulation director
GORDON FAWCETT secretary-treasurer
RALPH DAIGH editorial director
JAMES B. BOYNTON director of advertising
LEE WILSON production director
AL ALLARD art director

WILLIAM L. PARKER editor

LAWRENCE SANDERS feature editor
J. ROBERT CONNOR news editor
HARVEY GARDNER picture editor

ROBERT BRIGHTMAN crafts & hobbies editor
FRED HONIG associate editor
JOHN J. SMITH associate editor

AL HEIGHINGTON art editor
FRED COSPITO art associate
JIM TRIPP art associate
MARK BINN art assistant
HARRY FASS art assistant

HELEN E. SLOWIN production editor
ROBERT G. BEASON promotion editor

Volume 51, Number 7

Permission hereby granted to quote from this issue of this magazine on radio or television, provided a total of not more than 1,000 words is quoted and credit is given to the title of the magazine and issue, as well as the statement, copyright 1955, by Fawcett Publications, Inc.

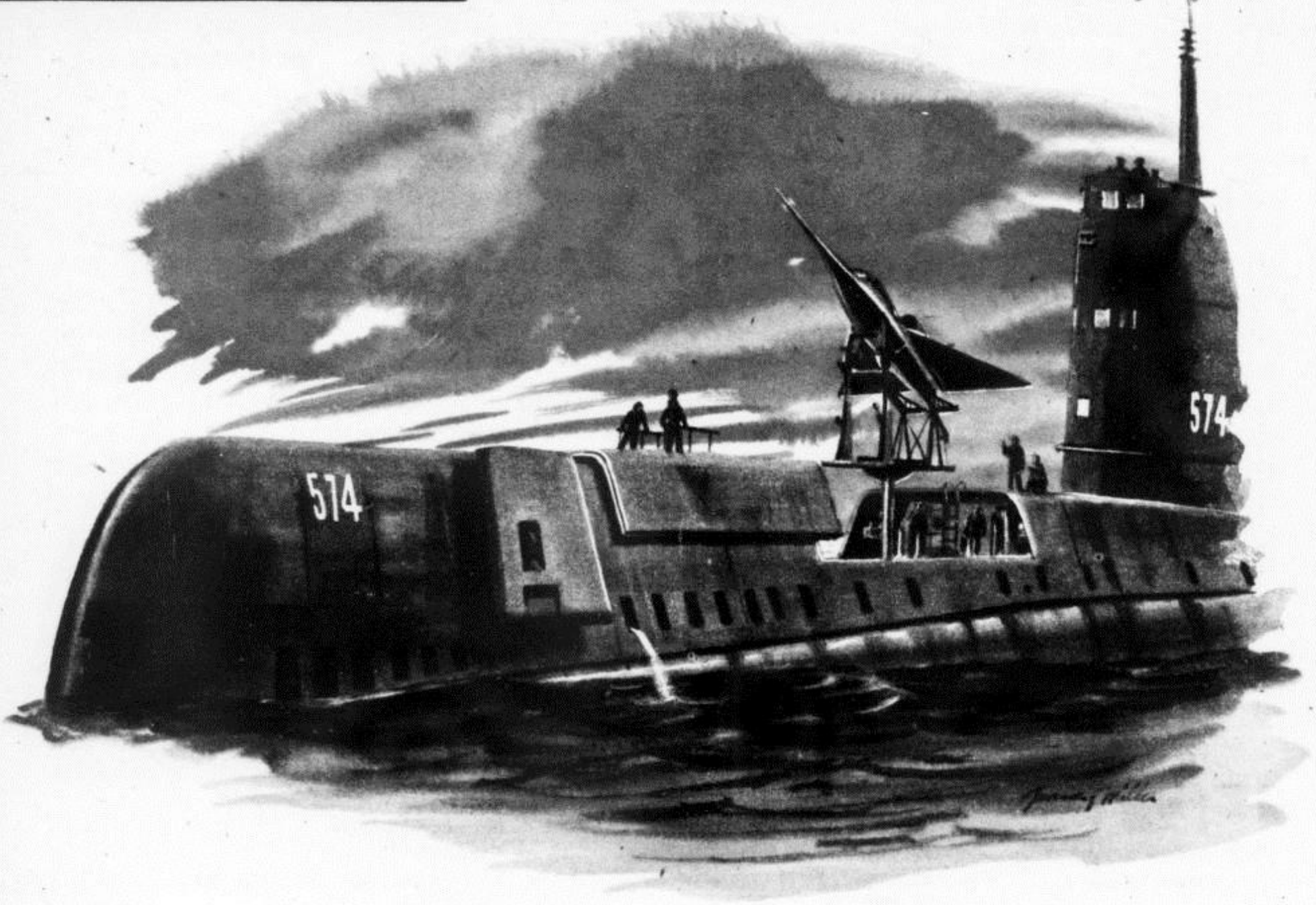
MECHANIX ILLUSTRATED is published monthly by Fawcett Publications, Inc., Fawcett Building, Fawcett Place, Greenwich, Conn. Editorial offices: 67 W. 44th St., New York 36, N. Y. Advertising manager: Garrett Livingston. Advertising offices: 67 W. 44th St., New York 36, N. Y.; 612 N. Michigan Ave., Chicago 11, Ill.; 672 S. Lafayette Park Place, Los Angeles 57, Cal.; 110 Sutter Street, San Francisco 4, Cal.; 1659 Guardian Bldg., Detroit 26, Mich. Entered as second class matter at the post office at Greenwich, Conn., under the act of March 3, 1879, with additional entry at Louisville, Ky. Printed in U. S. A. Title registered in the U. S. Patent Office.

Copyright 1955 by Fawcett Publications, Inc. Reprinting in whole or in part forbidden except by permission of the publishers. Address manuscripts to New York editorial office. Unacceptable contributions will be returned if accompanied by sufficient first class postage. Not responsible for lost manuscripts or photos.

All remittances and correspondence concerning subscriptions as well as notification of change of address should be addressed to MECHANIX ILLUSTRATED Circulation Dept., Fawcett Place, Greenwich, Conn. Price 25c a copy. Subscription price $3.00 per year in the U. S. and possessions and Canada. All other countries $6.00 per year. Foreign subscriptions and sales should be remitted by International Money Order in U. S. funds payable at Greenwich, Conn.

MEMBER AUDIT BUREAU OF CIRCULATIONS

COVER STORY



Hydraulic launching platform rises from the deck of the A-sub and sends aloft a midget Sea Dart-type air craft which can haul small A-bomb slung beneath its belly.

Atomic Sub Launches Atom Raider

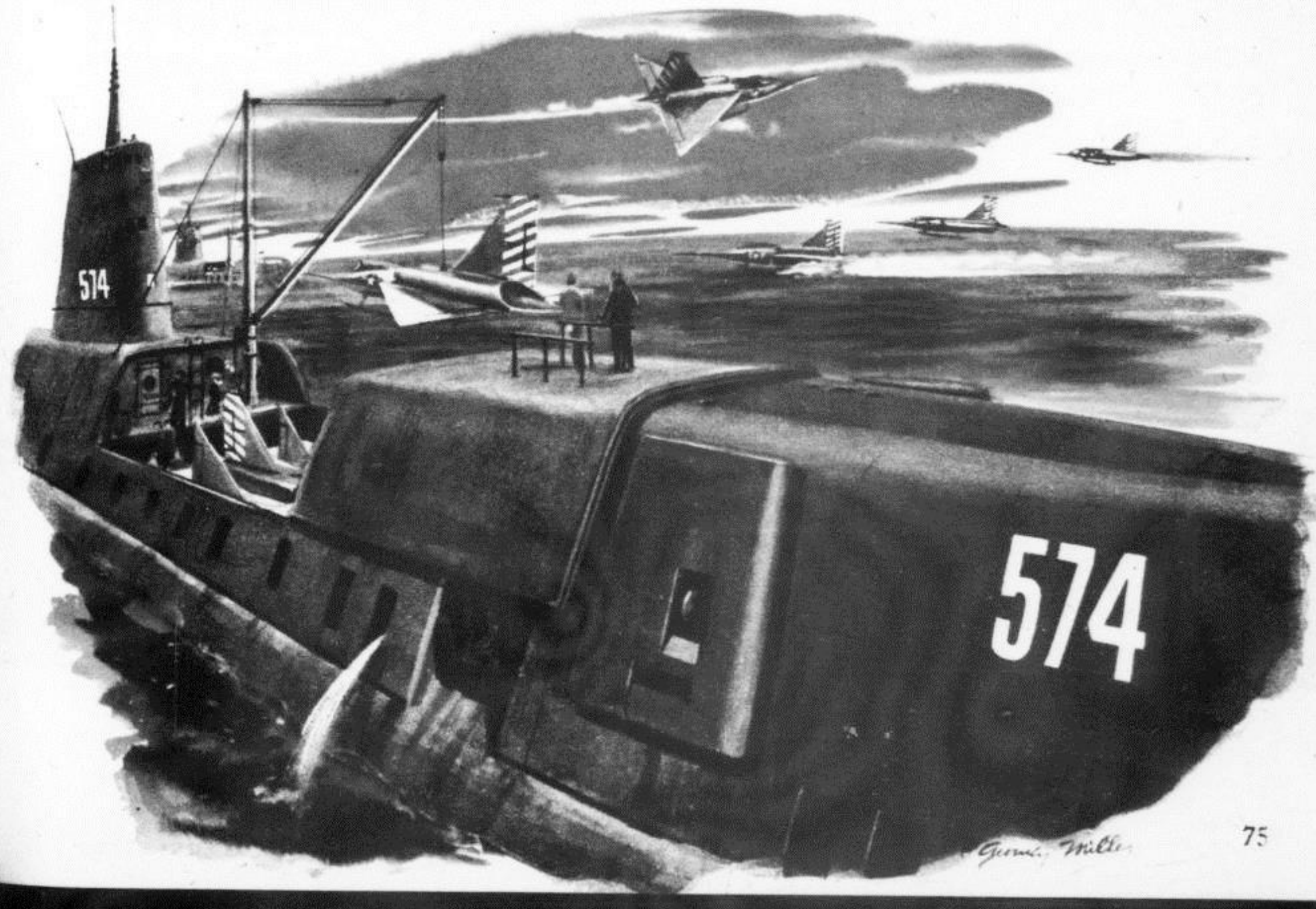
MI artist Gurney Miller's triple-threat combination: An A-sub with zero length launcher and A-bomb raider.

SILENTLY moving beneath the surface deep in enemy waters, the sleek atomic-powered sub rises in the half-light of the dawn and releases a midget A-bomb-carrying aircraft which races deep into hostile territory to unload its cargo of devastation. Its mission complete, the tiny ship returns to its rendezvous and, landing on water skis, is picked up and stowed below by the waiting sub. Then pointing its nose homeward, the submersible streaks to safety.

This proposed marauding sub, like its real-life counterpart, the A-powered Nautilus, can stay underwater indefinitely. Artist Gurney Miller's vessel has a "hangar" below decks which opens via a sliding panel. Planes are brought to the zero launching platform by a sliding belt when they are ready for action. A wolfpack of such subs could carry and launch a squadron of atom raiders. •

Zero length launcher hurtles the A-raider skyward in a few seconds. The submersible then goes down and waits tensely beneath the surface until plane completes mission.

Sliding panel rolls back revealing storage space for planes below the deck. A revolving belt slides the water ski-landing craft from "hangar" to put them in action.



AYTON PUBLIC LIBRARY
REFERENCE
2nd FLOOR
DEC 15 '47

MECHANIX ILLUSTRATED

JANUARY

INC.
N. Y.
ation

Helicopter Sky Hook
See page 44

SCIENCE TRANSPLANTS UNBORN BABIES

mechanix illustrated

Title Registered U.S. Patent Office

A Fawcett Publication

W. H. FAWCETT, Jr., President — ROGER FAWCETT, General Manager — RALPH DAIGH, Editorial Director

ROBERT HERTZBERG, Executive Editor

FEATURE STAFF
GILBERT PAUST, Feature Editor
HARRY BATES, Science Editor
IO McCALLION, Production

CRAFTS & HOBBIES STAFF
LARRY EISINGER, Crafts & Hobbies Editor
ROBERT BRIGHTMAN, Photography Editor
WILLIAM E DUGGAN, Boating Editor

ART STAFF
FRANK TAGGART, Art Editor
HAROLD KELLY, Art Associate
CLYDE L BAIRD, Art Associate

JANUARY, 1948 — VOL. XXXIX. No 3

Cover drawing by Joe Kotula

SPECIAL FEATURES

Science Transplants Babies 33
By Lester David
The icebox makes an unusual mother

He Sweats for a Living 37
By Don Romero
And every drop is collected and used

Atom-Ray Detective 40
By Gold V. Sanders
Meet the indispensable Geiger counter

Sky Hook Is Here! 44
By Frank Tinsley
The helicopter makes an excellent crane

Eyes and Ears for Industry 48
By Eugene W. Nelson
Ingenious devices search out hidden trouble

Fire Fighting with Water Bombs 52
By Arthur A. Brown
Bomb drops in, forest fire goes out

Muroc—Our Greatest Air Base 56
By C. B. Colby
Secret research at a giant airfield

MI Tests the '48 Packard 62
By Tom McCahill
Straight dope on the "push-button" line

Our War on Insect Invaders 64
By S. A. Rohwer
Insects are very dangerous stowaways

We CAN Control the Weather 68
Based on an interview with Dr. Vladimir K. Zworykin, RCA
Ain't gonna rain no more. Maybe

Little Heater—Big Heat 74
By Lawrence Eldred
A radical new midget home-heating unit

Bird Builders 81
By Gold V. Sanders
Taxidermists no longer "stuff" birds

How Fast Can Animals Run? 86
By Lester David
Could you outrun an angry elephant?

Stress Patterns Show Strength 90
Strength analysis with polarized light

Money Mechanics 94
The mint makes an awful lot of dimes

Sportsmen Fly! 96
'Most any place is within easy reach

Editor's Workbench 18

(Crafts and Hobbies. see page 6)

Copyright 1947 by Fawcett Publications, Inc

MECHANIX ILLUSTRATED is published monthly by Fawcett Publications, Inc., Fawcett Building, Fawcett Place, Greenwich, Conn. Printed in U.S.A. Advertising and Editorial Offices, 67 West 44th St., New York 18, N. Y. West Coast Representatives: Los Angeles, H. P. Houston Edward S. Townsend Co., 645 S. Flower St.; San Francisco, Edward S. Townsend, Edward S. Townsend Co., Russ Building. General Offices Fawcett Building, Fawcett Place, Greenwich, Conn. Eliott D. Odell, Advertising Director; Roscoe K. Fawcett, Circulation Director; Allen B Norman, Secretary; Gordon Fawcett, Treasurer; Al Allard, Art Director. Entered as second-class matter at the post office at Greenwich, Conn. under the act of March 3, 1879. Additional entry at Louisville, Ky. Copyright 1947 by Fawcett Publications, Inc. Reprinting in whole or in part forbidden except by permission of the publishers. Title registered in the U. S. Patent Office. Address manuscripts to MECHANIX ILLUSTRATED, 67 West 44th St., New York 18, N. Y. All remittances and correspondence concerning subscriptions as well as notification of change of address should be addressed to Circulation Department, Fawcett Building, Fawcett Place, Greenwich, Conn. Not responsible for lost manuscripts or photos. Unacceptable contributions will be returned, if accompanied by sufficient first class postage. Price 15c per copy Subscription price $1.80 per year in Canada, the United States and possessions. Foreign subscriptions $2.50 per year. Foreign subscriptions and sales should be remitted by International Money Order in United States funds, payable at Greenwich, Conn. Advertising forms close fifth of second month preceding date of issue

MEMBER AUDIT BUREAU OF CIRCULATIONS

AUD and

Inside

flow to use th saws—How t mitre box—H rules and scale arithmetic—S timating stren and sills—How estimate costs ages, bungalo plans—Drawi cavate—How steel square— skylights—Ho interior trim— lay floors—H

AUDEL, Pu

Mail Audels trial. If OK Otherwise I w

Name

Address

Occupation

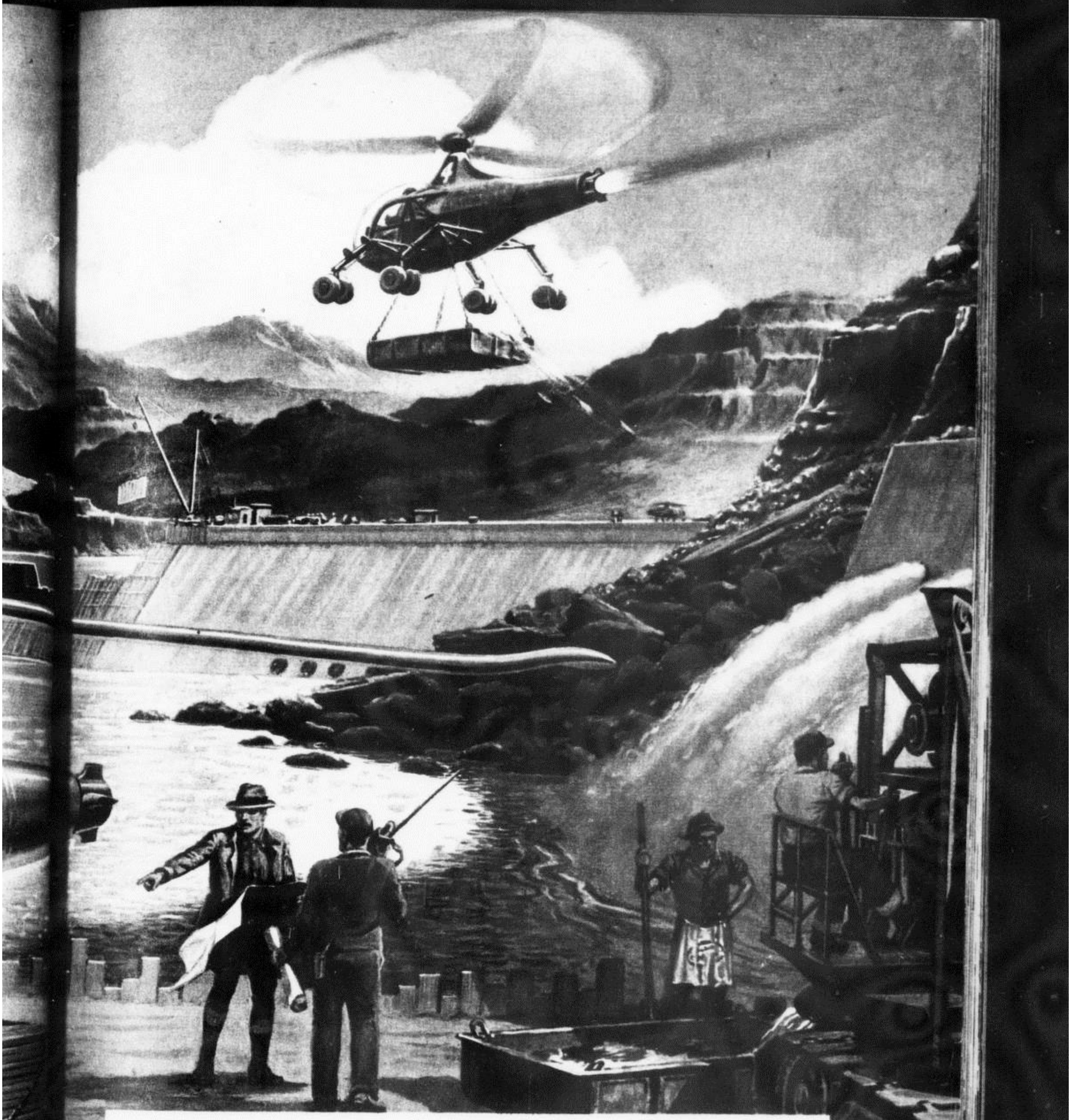
Employed by

P&

4 VOLS. $6 COMPLETE

PAY ONLY $1 A MO.

8
ATLAS
CONSTRUCTION
—COMPANY—



Sky Hook is Here!

A jet-helicopter tug that hovers like a hummingbird and has legs like a grasshopper.

BY FRANK TINSLEY

turn page.....

The "Sky Hook" is a radical departure from the present Kellett XR-10, whose two engines drive intermeshing rotors.

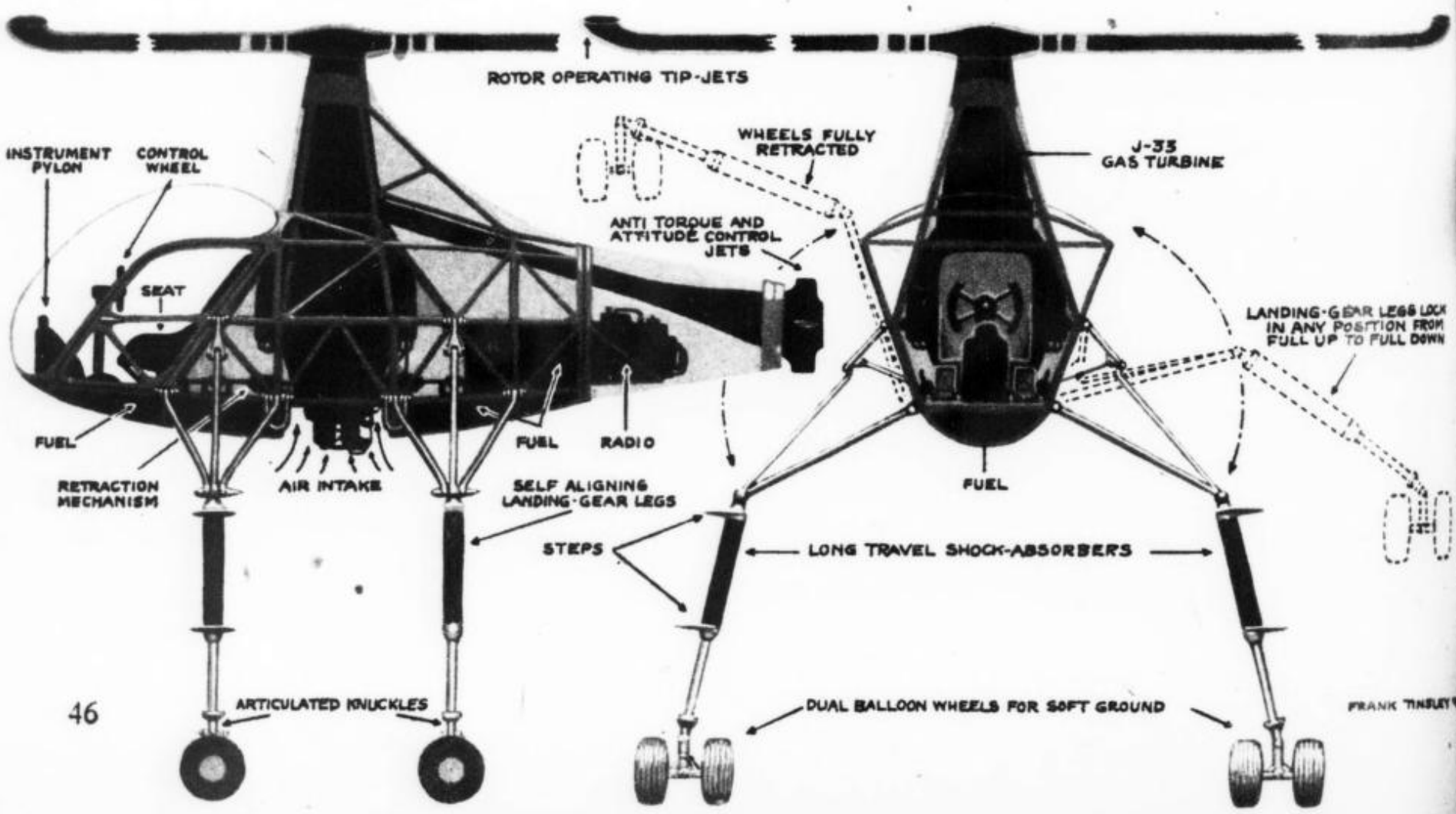
"YES Sirree, Bub," the old-time steel erector used to say with a grin as open-mouthed onlookers gaped at some seemingly unsupported girder, "we hold 'em up there with *sky hooks!*"

For years, that handy bit of dream gear has more than held its own with left-handed monkeywrenches and similar appliances in the tool kits of innumerable construction camp humorists. But the hoary old gag will soon draw its last chuckle. Just as the derisive chant of "Get a horse!" and the japes about "flying machines" died with the perfection of the automobile and airplane, the "sky hook" faces imminent dissolution as a subject for jest, in its rebirth as an actuality!

The army is reported to be fathering an honest-to-gosh sky hook in the form of a jet-driven helicopter aerial tug. The prototype of this third-dimensional towboat, developed by the same crack team of engineers who designed the XR-10 military helicopter and its ten-passenger civil sister ship, is said to be nearing completion in the Kellett Aircraft Corporation's plant at North Wales, Pa.

Like its marine counterpart, the sky tug will consist of little more than a powerful jet engine driving huge, 60-foot rotors and mounted in a simple lifting framework with a pilot's office hung on one end and a torque-countering tail-pipe on the other. Four long, spindly legs will enable the tug to straddle its load like a lumber yard truck and almost anything within its lift limits can be carried.

While details and performance of this amazing machine are still a deep Army secret, enough is known of its general form to permit a rough visualization of its probable structure and appearance. As the sky tug will find its greatest usefulness in rocky or soft terrain, individually-adjustable legs and dual low-pressure wheels take care of inequalities of the landing area and distribution of weight. The pilot sits in a one-piece, plastic enclosure, similar to those on the Army's latest helicopter models. The necessity of a torque-neutralizing tail-pipe has been capitalized on by the addition of attitude-control jets and an auxiliary forward thrust nozzle. Cargo is slung from four steel loops below the center of gravity and loads are transferred by heavy, welded-tube framework to the rotor-mounting collar. The J-33 jet engine is mounted vertically and draws its air supply through the open bottom of the framework. The hot gas is piped into the rotor hub and thence out through the leading edges of the blades to tip nozzles. Thermal anti-icing is automatically provided. A small take-off pipe services the tail jets. [*Continued on page* 156]

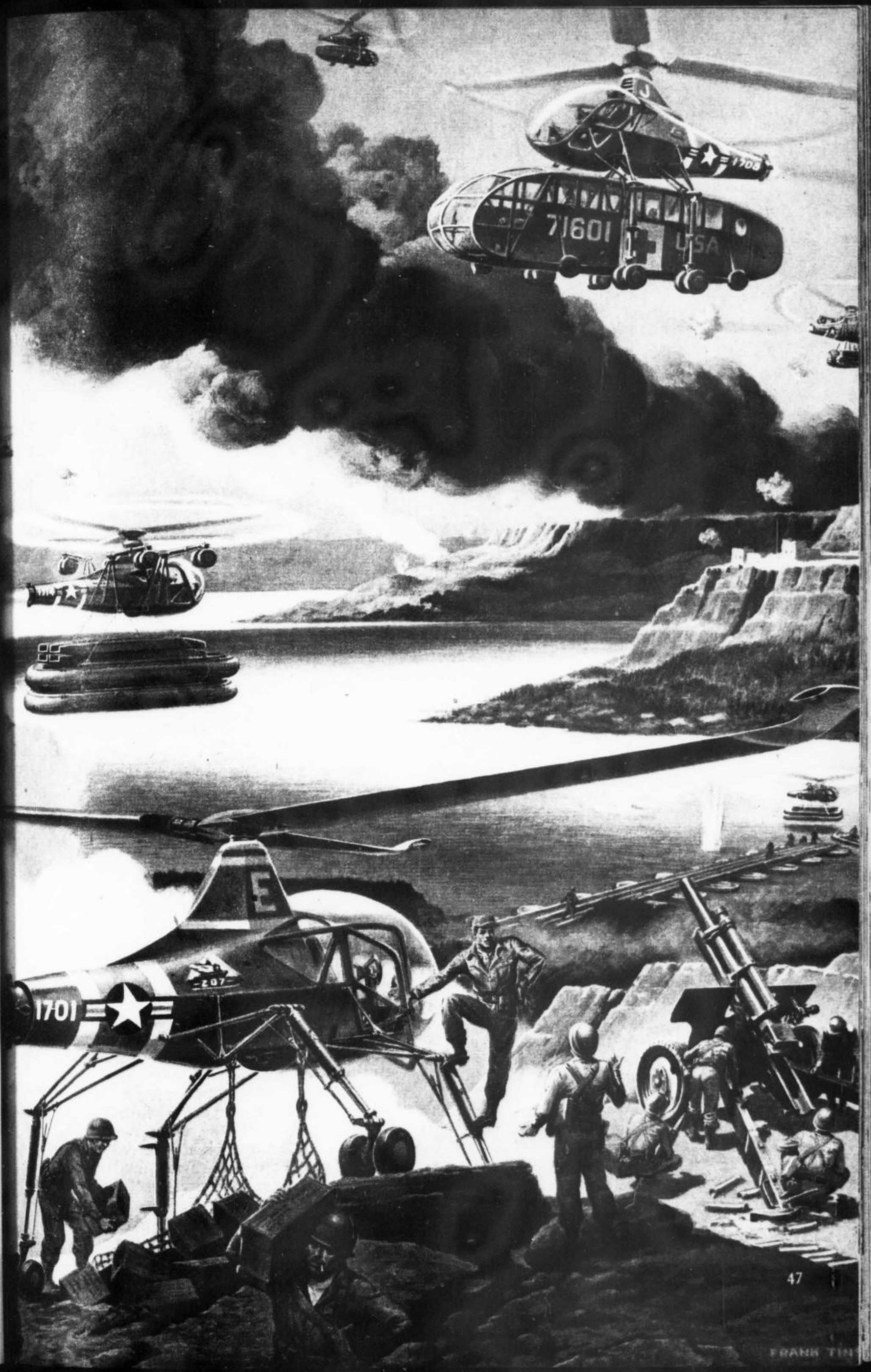


art,
of
jet
foot
im-
h a
end
ail-
ong,
the
e a
ost
nits

m-
ine
n is
t a
uc-
will
or
egs
are
and
n a
to
ter
eu-
on
jets
zle.
low
ns-
ork
jet
ws
n of
nto
the
les.
ro-
the
56]

L LEGS LOCK
TION FROM
FULL DOWN

ANK TINSLEY



32 MORE PAGES! NEW! BIGGER!

MECHANIX ILLUSTRATED©

THE HOW-TO-DO MAGAZINE

20c

FEBRUARY

Light-Propelled Space Ship
See Page 64

LD YOUR OWN HIGH FIDELITY RADIO-PHONOGRAPH

STRANGEST FOODS IN THE WORLD

MECHANIX ILLUSTRATED

SPECIAL FEATURES

Science Learns Secrets Of The Witch Doctors . . . . . *Lester David* 59
Cover: Light-Propelled Space Ship . . . . *Frank Tinsley* 64
You'll Never Go Hungry . . . . . *I. B. Neer* 72
Where Is Your Double? . . . . . *John N. Makris* 94
With Chukars—It's Luck . . . . . *Raymond R. Camp* 98
Sports Store Paradise . . . . . *Art Henry* 106
Uncle Sam's Free Patents . . . . . *James N. Miller* 110
Animals By The Googol . . . . . *O. O. Binder* 118

TOM McCAHILL

What McCahill Thinks Of The '54 Ford 84
MI Tests The New Jeep 88

REGULAR FEATURES

New In Science 70
Money Making Idea: Opportunity Knocked On My Log Cabin Door . . . . . *Byron Kempton* 78
Prize Gadget: Rain Alarm 81
Pin-Up Car 82
New For The Road 83
New For The Home 101
MI Tests For Sportsmen . . . . . *Gil Paust* 102
He Found A Way: Gerhard Mennen's Talcum Powder . . *Alfred Lief* 105
MI Stoppers 109
Picture-Naries 113

SHORT FEATURES

Funny Money 68
Flying Hot Rod 76
Tuck-Away TV . . . . . *Glenn Infield* 92
Video Tape Recording 114
Sun, Salt, And Speed . . . . . *Kenneth Kincaid* 116

DEPARTMENTS

Editor's Workbench 18
Invention Clinic 28
Dear Editor 34

(Continued on page 6)

COVER: ART BY FRANK TINSLEY

MI

FEBRUARY 1954

W. H. FAWCETT, JR. president
ROGER FAWCETT general manager
ROSCOE K. FAWCETT circulation director
GORDON FAWCETT secretary-treasurer
RALPH DAIGH editorial director
LEE WILSON production director
AL ALLARD art director

WILLIAM L. PARKER editor

feature staff

GIL PAUST feature & outdoors editor
J. ROBERT CONNOR news editor
HARVEY B. JANES science editor

crafts & hobbies staff

ROBERT BRIGHTMAN crafts & hobbies editor
JOHN G. KINGDON boating editor
JOHN L. SCHERER associate editor

art staff

AL HEIGHINGTON art editor
FRED COSPITO art associate
GENE BUTERA art associate

HELEN E. SLOWIN production editor
LARRY EISINGER advisory editor

VOLUME 50 NUMBER 2
A FAWCETT PUBLICATION

COPYRIGHT 1953 BY FAWCETT PUBLICATIONS, INC.
TITLE REGISTERED U. S. PATENT OFFICE

Permission hereby granted to quote from this issue of this magazine on radio or television, provided a total of not more than 1,000 words is quoted and credit is given to the title of the magazine and issue, as well as the statement, copyright 1954, by Fawcett Publications, Inc.

MECHANIX ILLUSTRATED is published monthly by Fawcett Publications, Inc., Fawcett Building, Fawcett Place, Greenwich, Conn. Editorial offices: 67 W. 44th St., New York 36, N. Y. Advertising manager: Garrett Livingston. Advertising offices: 67 W. 44th St., New York 36, N. Y.; 612 N. Michigan Ave., Chicago 11, Ill.; 643 S. Flower St., Los Angeles 17, Cal.; 605 Market St., San Francisco 5, Cal.; 1659 Guardian Bldg., Detroit 26, Mich. Entered as second class matter at the post office at Greenwich, Conn., under the act of March 3, 1879, with additional entry at Louisville, Ky. Printed in U. S. A. Title registered in the U. S. Patent Office. Copyright 1954 by Fawcett Publications, Inc. Reprinting in whole or in part forbidden except by permission of the publishers. Address manuscripts to New York editorial office. Unacceptable contributions will be returned if accompanied by sufficient first class postage. Not responsible for lost manuscripts or photos. All remittances and correspondence concerning subscriptions as well as notification of change of address should be addressed to MECHANIX ILLUSTRATED Circulation Dept., Fawcett Place, Greenwich, Conn. Price 20¢ a copy. Subscription price $2.40 per year in the U. S. and possessions and Canada. All other countries $5.00 per year. Foreign subscriptions and sales should be remitted by International Money Order in U. S. funds payable at Greenwich, Conn.

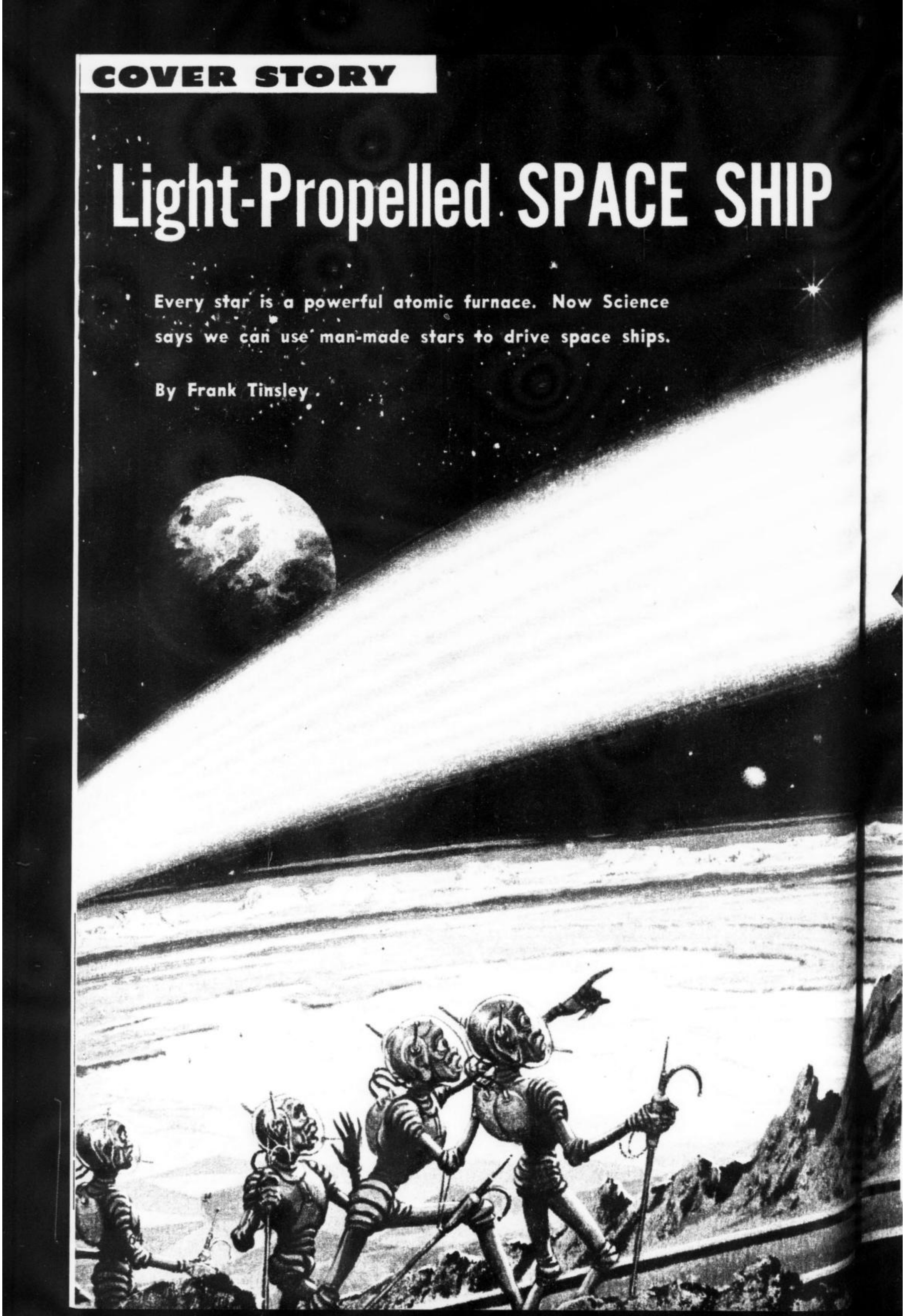
MEMBER AUDIT BUREAU OF CIRCULATIONS

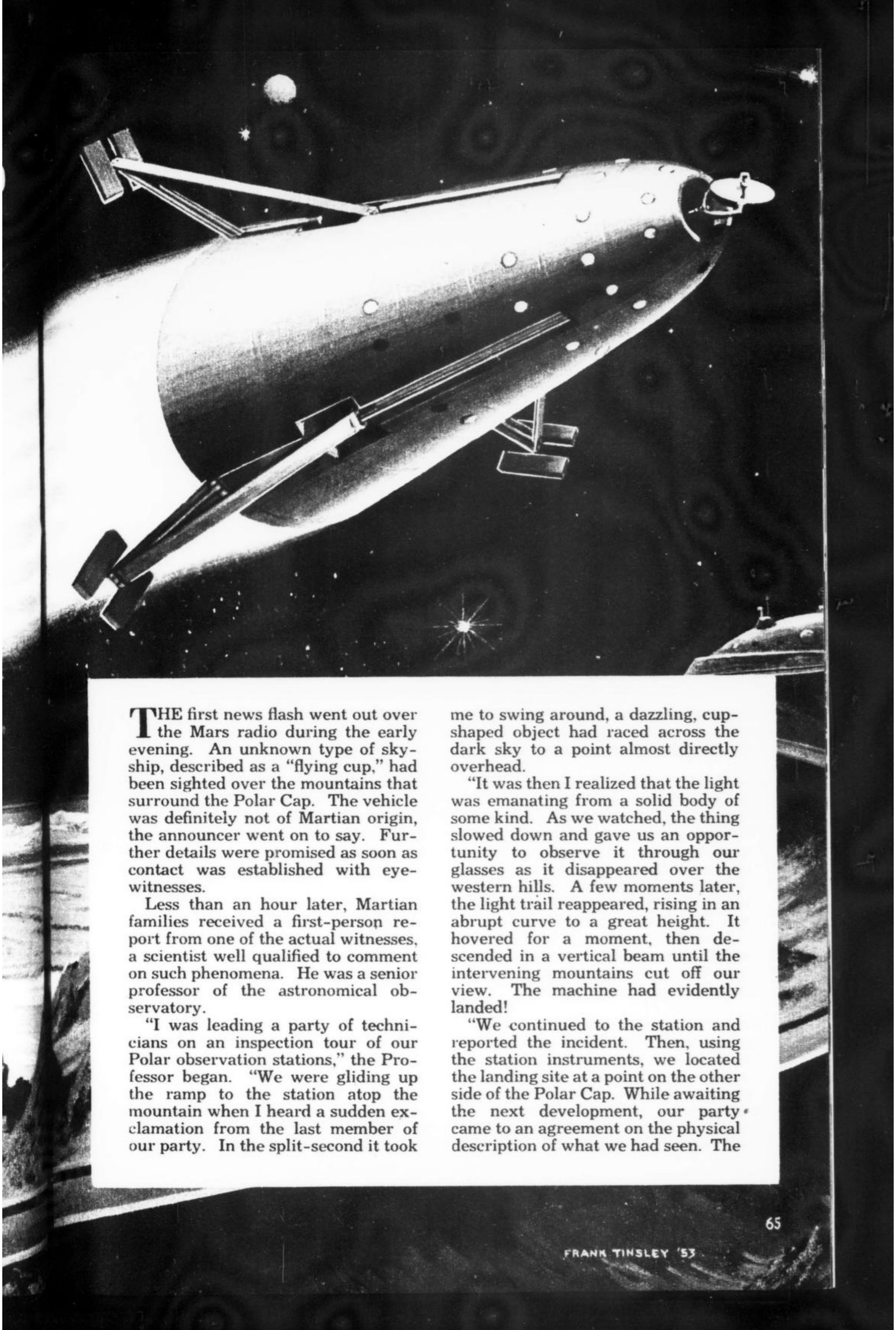
COVER STORY

Light-Propelled SPACE SHIP

Every star is a powerful atomic furnace. Now Science says we can use man-made stars to drive space ships.

By Frank Tinsley





THE first news flash went out over the Mars radio during the early evening. An unknown type of sky-ship, described as a "flying cup," had been sighted over the mountains that surround the Polar Cap. The vehicle was definitely not of Martian origin, the announcer went on to say. Further details were promised as soon as contact was established with eye-witnesses.

Less than an hour later, Martian families received a first-person report from one of the actual witnesses, a scientist well qualified to comment on such phenomena. He was a senior professor of the astronomical observatory.

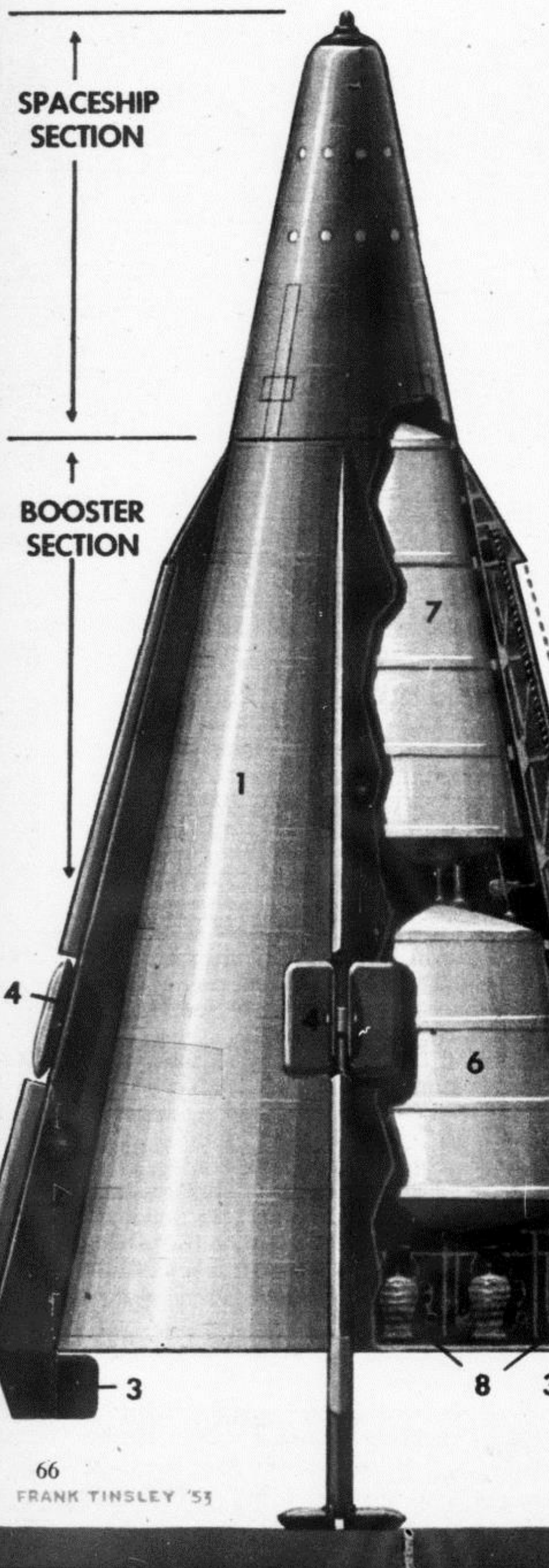
"I was leading a party of technicians on an inspection tour of our Polar observation stations," the Professor began. "We were gliding up the ramp to the station atop the mountain when I heard a sudden exclamation from the last member of our party. In the split-second it took me to swing around, a dazzling, cup-shaped object had raced across the dark sky to a point almost directly overhead.

"It was then I realized that the light was emanating from a solid body of some kind. As we watched, the thing slowed down and gave us an opportunity to observe it through our glasses as it disappeared over the western hills. A few moments later, the light trail reappeared, rising in an abrupt curve to a great height. It hovered for a moment, then descended in a vertical beam until the intervening mountains cut off our view. The machine had evidently landed!

"We continued to the station and reported the incident. Then, using the station instruments, we located the landing site at a point on the other side of the Polar Cap. While awaiting the next development, our party came to an agreement on the physical description of what we had seen. The

FRANK TINSLEY '53

Booster section of space ship powers take-off into airless space where it is detached and left orbitting about the earth while the upper, manned section of the ship proceeds under photon power.



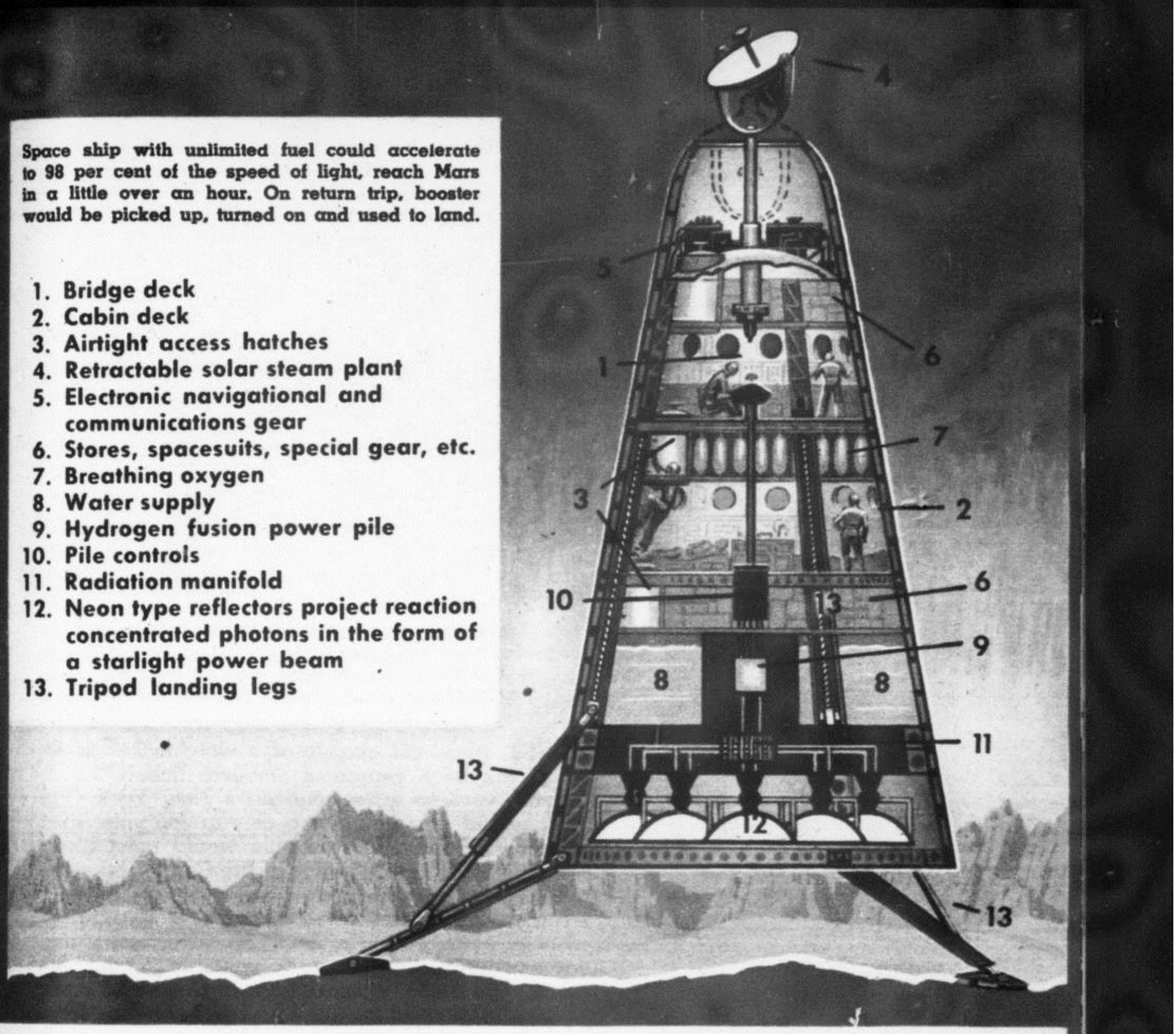
1. Outer shell of booster section
2. Four directional vanes
3. Graphite steering rudders
4. Landing legs retracted
5. Landing legs extended
6. Chemical fuel tank
7. Chemical oxidizer tank
8. Rocket engines

intruding machine is cupped in shape with a rounded tip. It is smooth, shiny and metallic appearing. Some of our party are certain they saw round, illuminated port-holes in it. From the blunt bottom of the machine, streamers of blinding light jetted out, forming a long trail of luminescence. This power plant—if it is a power plant—emits no sound."

The Professor's broadcast roused a storm of controversy. One eminent scientist labeled the report as "a typical example of mass hysteria." The Director of Military issued reassuring assertions that the flying cups being sighted all over Mars were nothing more than 1: reflected lights from terrain traffic, 2: meteorological balloons and 3: misidentified heavenly bodies of our Solar System. The public furor continued. An eminent astronomer, announced that the phenomena could not have been a vehicle from outer space because there was no place it could have come from. "Learned observations," he claimed, "have long since proven that our nearest neighbor, Earth, is surrounded by such a heavy, oxygen-laden atmosphere, that any form of life, as Martians understand the term, is clearly impossible. Furthermore," he said, "that planet is almost entirely covered with a fluid concentration of moisture called 'water' and what land areas remain are choked with a density of vegetable growth."

Such an exploratory visit by an Earth-built space ship to neighboring Mars has long been the dream of would-be astro-

FRANK TINSLEY '53



nauts. Until recently, the dream has seemed unattainable because of the limitations of chemical rocket fuels and the immense distances involved. The Moon is not so bad—a mere 239,000 miles from Earth—but Mars, at the nearest points to our orbit, is some 35,000,000 miles away. Atomic fission engines are being considered. The A-pile, however, merely provides heat for expanding the propulsive medium. This medium—gas in all present rocket plants—is expelled at a tremendous rate and lost. The problem of its tankage, therefore, remains to plague space ship designers. Barely enough of the stuff can be carried to break away from the Earth's gravitational pull. A tank large enough for the round-trip to Mars is a practical impossibility. Some entirely different reactive medium must be found that is self creating at the moment of discharge and need not be stored in tanks.

At a recent meeting of the International Aeronautical Federation in Zurich, Switzerland, such a medium was suggested in a joint paper by Dr. Eugen Saenger and his wife, Dr. Irene Saenger-Bredt. Both are responsible scientists, theoretical physicists well known for their work on the thermodynamics and aerodynamics of supersonic flight. The medium they propose is a stream of light particles or photons, already proven to have a measurable pressure effect. This effect is amplified in the deep vacuum of cosmic space where, generated by the gigantic hydrogen-fusion furnaces that we call suns and stars, the force of starlight drives together the minute particles of matter floating in space and collects them into ever growing nebulae.

Dr. Saenger's idea is to expedite the process, using a [*Continued on page* 202]

MECHANIX ILLUSTRATED©

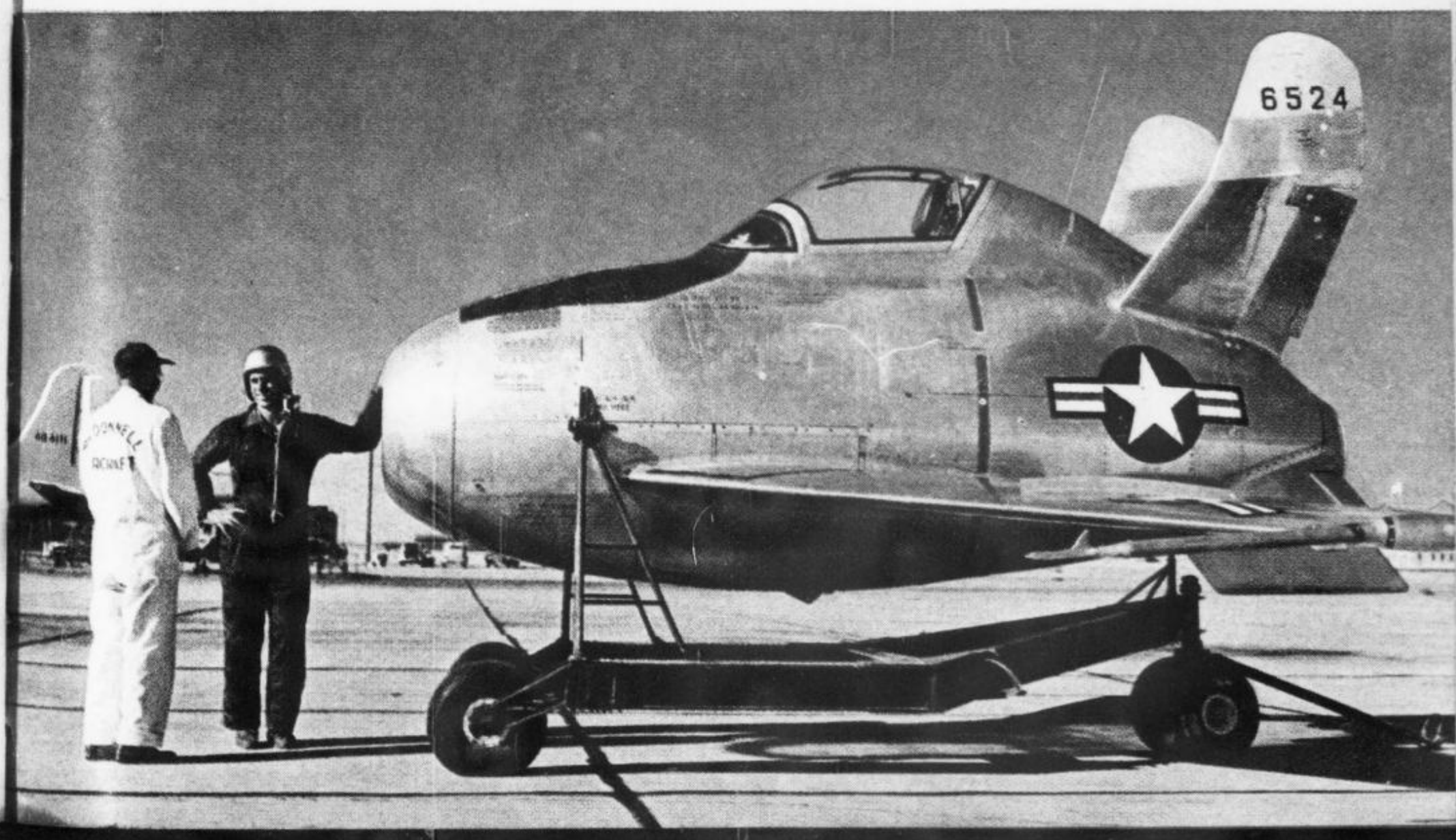
15c

JUNE

TOLEDO PUBLIC LIBRARY
Technology Department

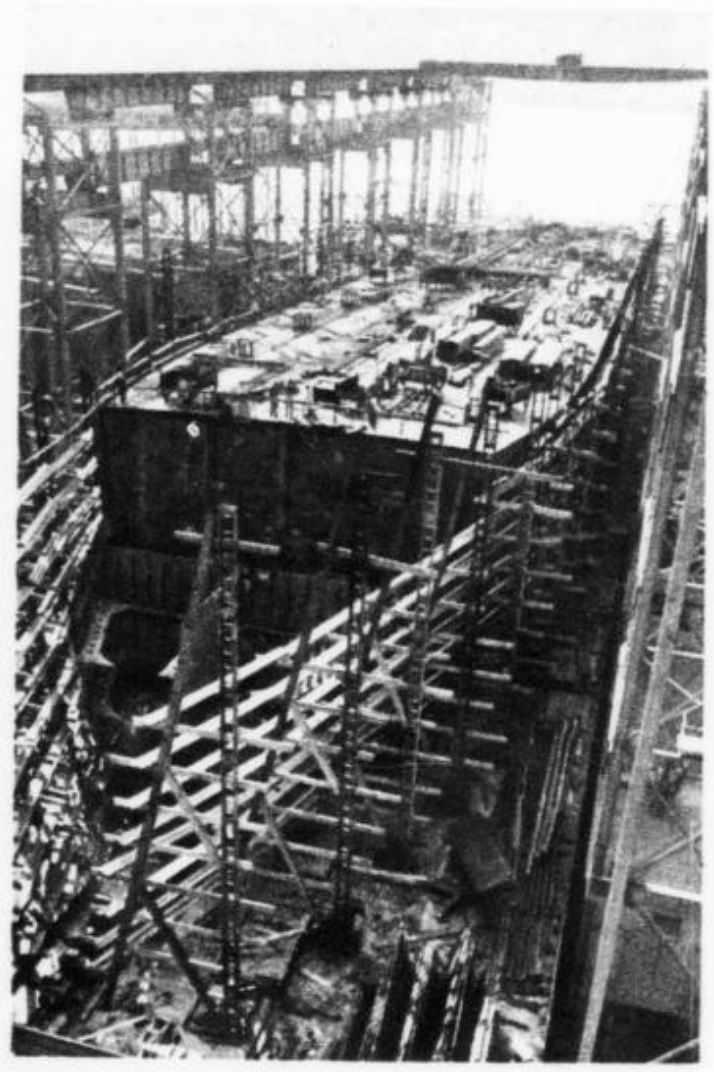
KANGAROO BOMBER CARRIES FIGHTER IN ITS POUCH

First Color Photos of New Jet Trapeze Plane

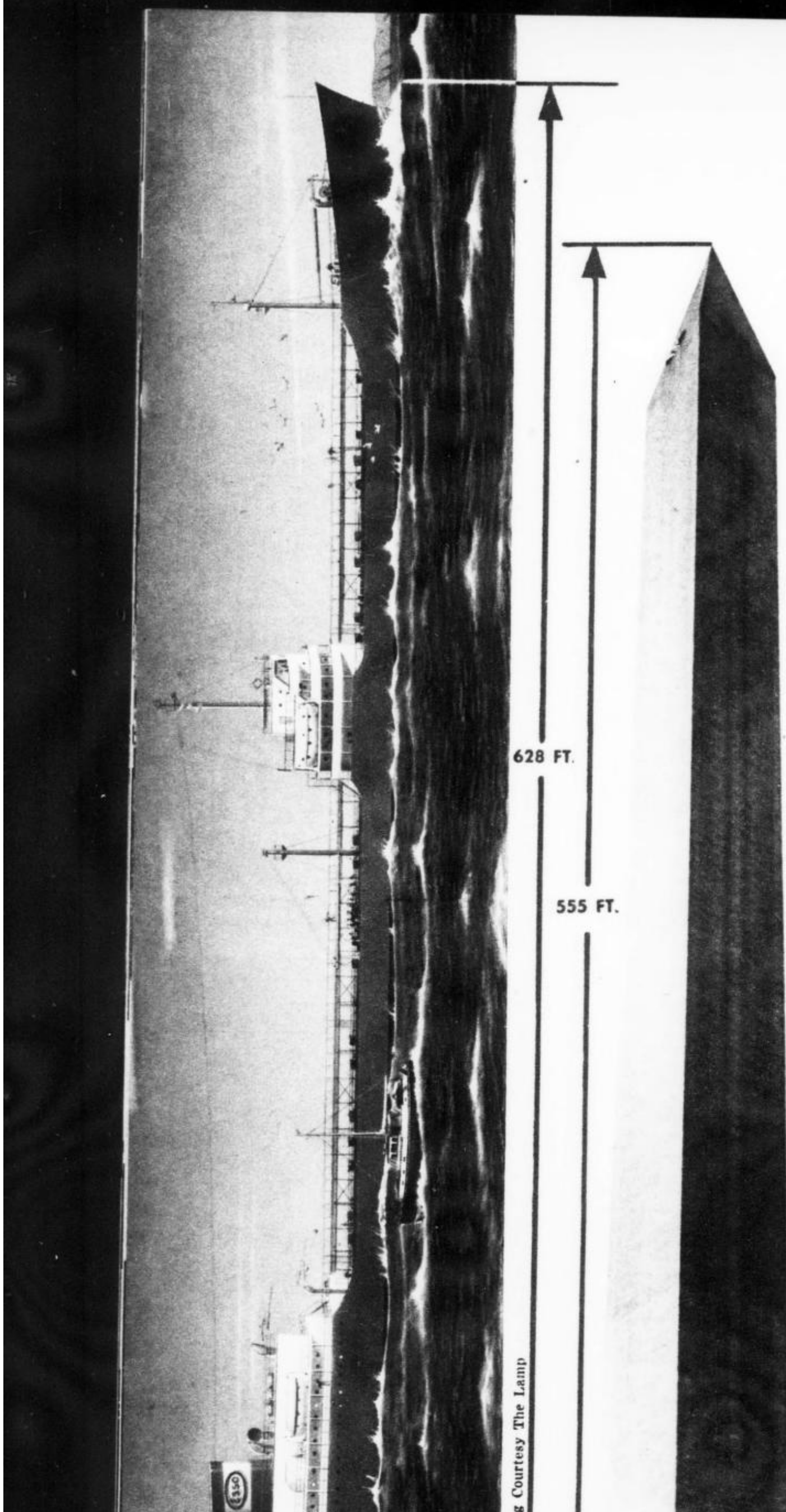


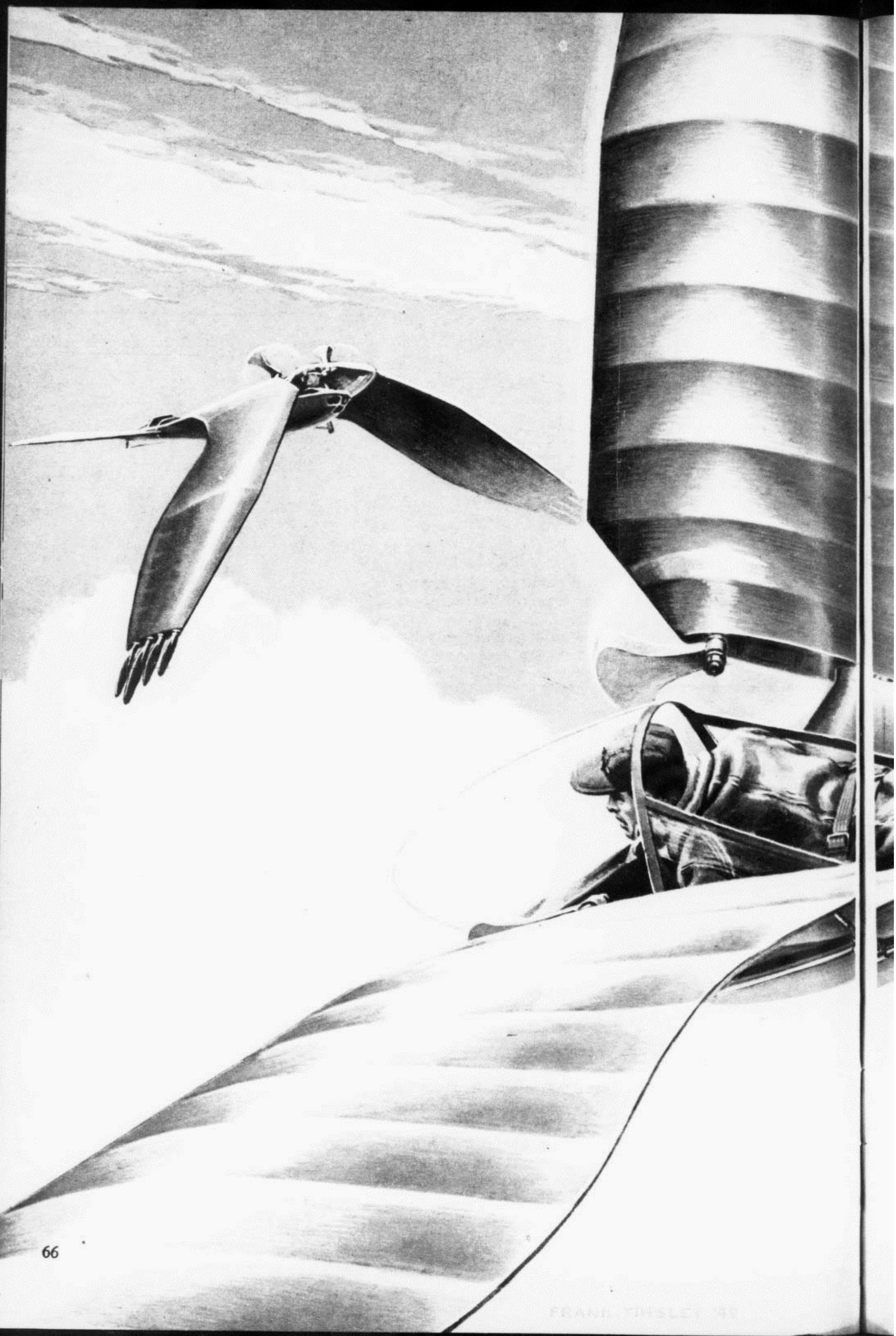
World's Largest Tanker

ENOUGH oil to overload a train of tank cars seven miles long poured out of the holds of the Esso Zurich when she glided into port recently at Bayway, N. J. Four steam-turbine pumps on Jersey Standard's new $5,500,000 tanker piped out the record load of 26,000 tons of Texas crude oil at 22,000 barrels an hour—twice as fast as other oilers had jetted their cargo. Sixty-three years of tankship design since the launching of the first true oiler, the German Gluckauf, went into this super-tanker, the biggest, most efficient oil transport ever built. The Zurich is the first of a fleet of 14 giant tankers that will help rid the East Coast of any fear of a fuel crisis, like the one that froze New York in 1947. •

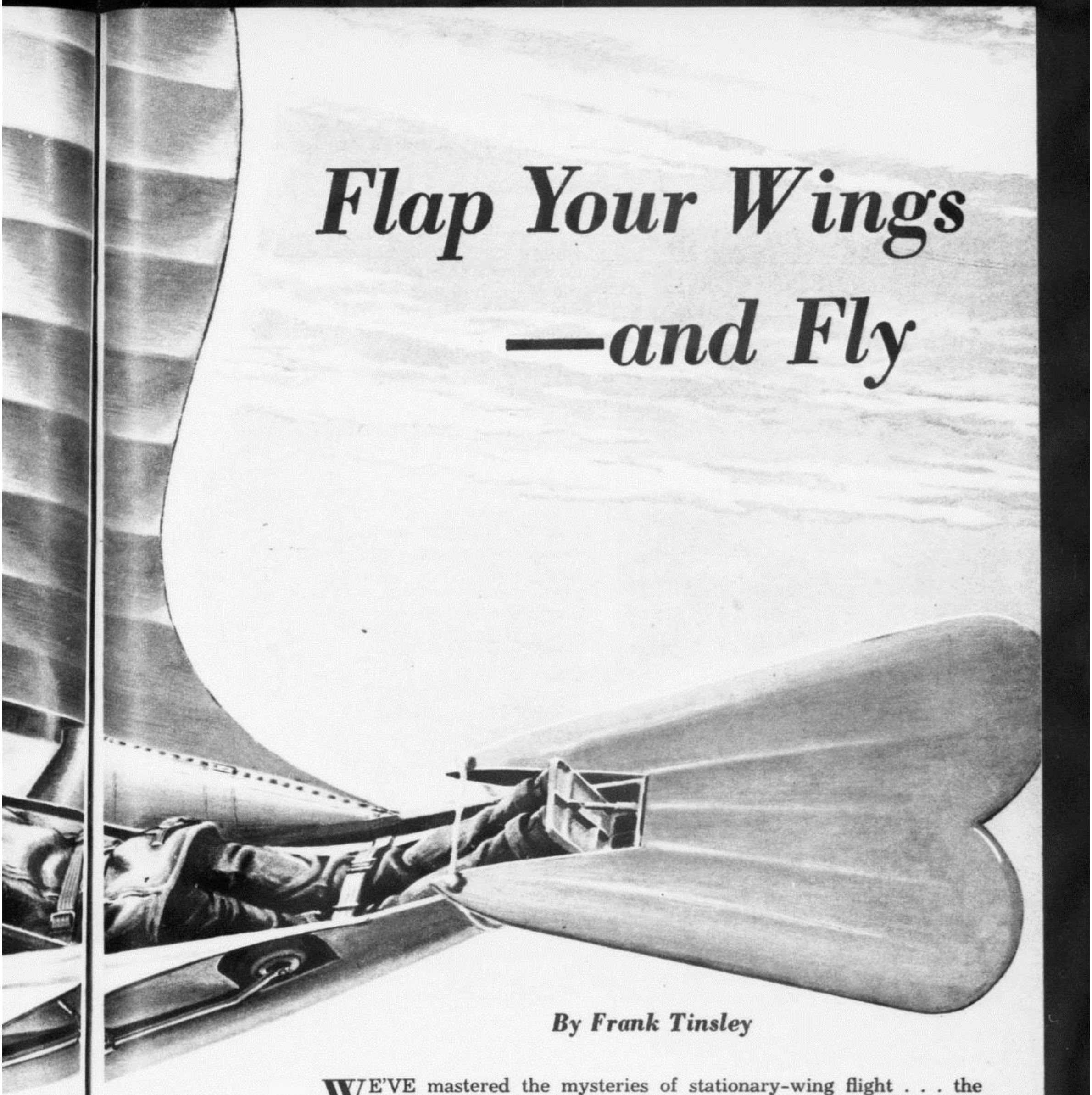


Shipway at Chester, Pa., had to be made 100 feet longer to build the big tanker. If you stood the Zurich on its stern, the great oil-laden leviathan, far left, would top the Washington Monument by 73 feet.





Flap Your Wings —and Fly



By Frank Tinsley

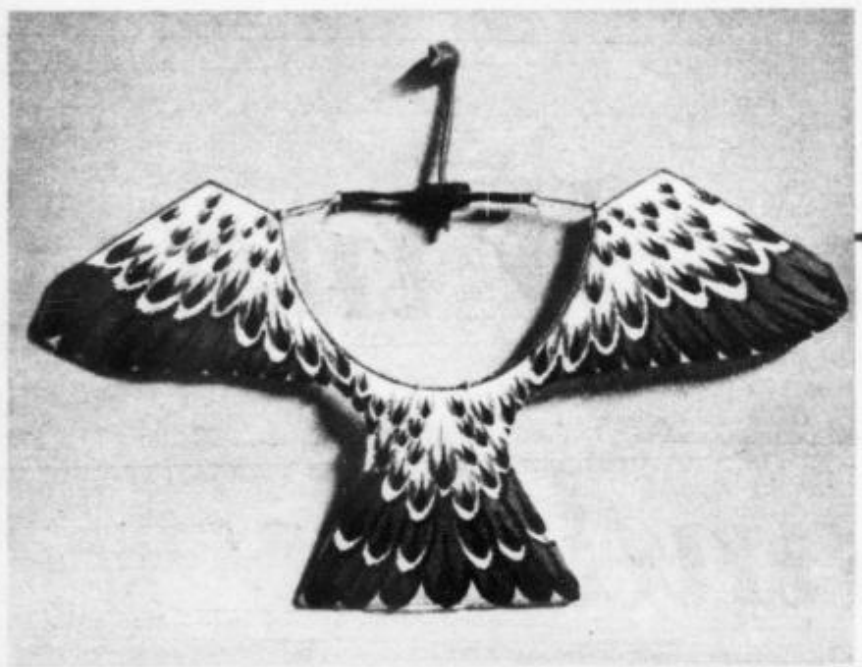
WE'VE mastered the mysteries of stationary-wing flight . . . the Wright brothers did that. Cierva showed us how to fly with a rotating wing . . . he gave us the helicopter. Now we are on the verge of solving the most intriguing problem of all: flapping-wing flight.

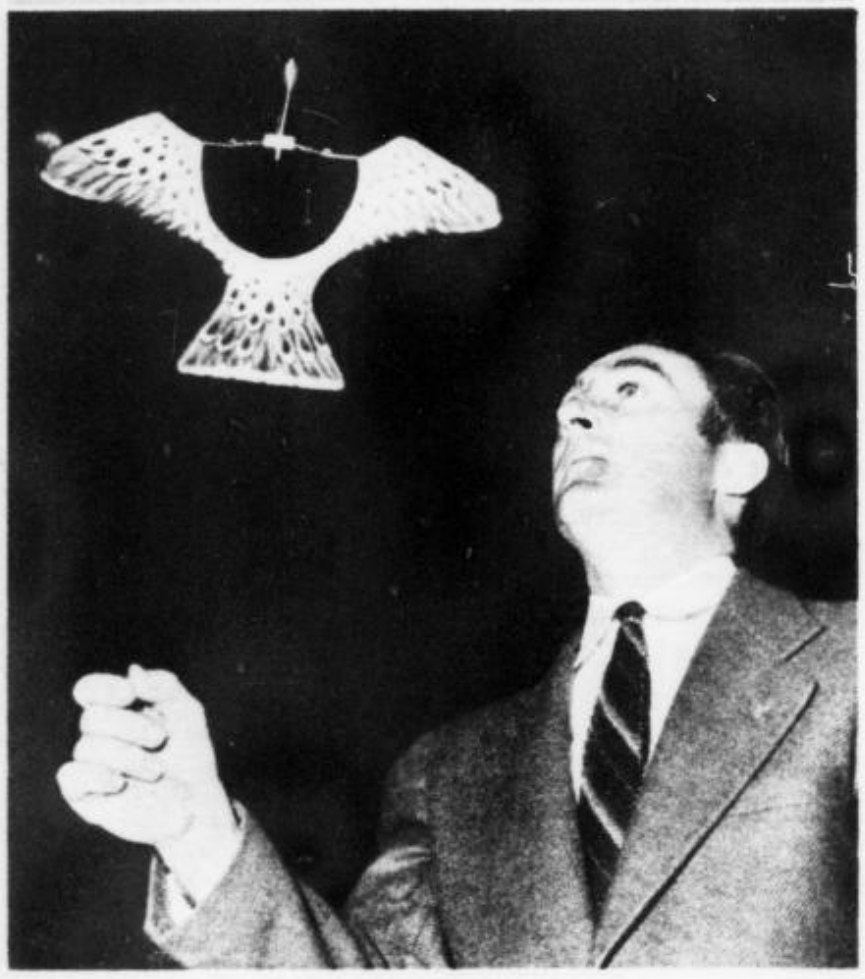
Experiments by Adam J. Stolzenberger, a young engineer at the Air Forces research center at Wright Field, Dayton, O., are pointing the way.

Stolzenberger, a wartime pilot of gliders and bombers, is working on plane vibration for the Aircraft Laboratories at the field to find out what causes the uncontrollable flutter that often rips apart wing tips and tail surfaces at high speeds. While studying these destructive vibrations, he had a flash of inspiration:

Instead of trying to eliminate those dangerous wing-wagging forces, why not put them to work to power a pair of flapping wings?

Quietly he began his own personal experiments last year to test his





Secret of flap-wing flight lies in the mechanical bird's odd head, an unbalanced rotor that spins on the band. Below, Stolzenberger lets his bird fly.

idea for an ornithopter, the technical term for a flap-propelled aircraft. He built small birdlike models that had their wings set on hinges. For power he used rubber-band engines that developed strong vibrational forces by whirling an unbalanced stick or rotor. These vibrations set up a wide flutter or resonance in the wing spars and made the wings flap up and down as if Stolzenberger's mechanical birds had suddenly come to life.

During his experiments he built more than 250 flying models and tried out numerous shapes and wing forms, including those of swallows, hummingbirds and eagles. These mechanical birds take off from his hand or some fixed point. They flap upward a moment to clear obstacles, then level off and fly straight as a crow. Through resonance with the rotor that creates flutter-waves by its off-balance spinning, the wings flap like a real bird in flight.

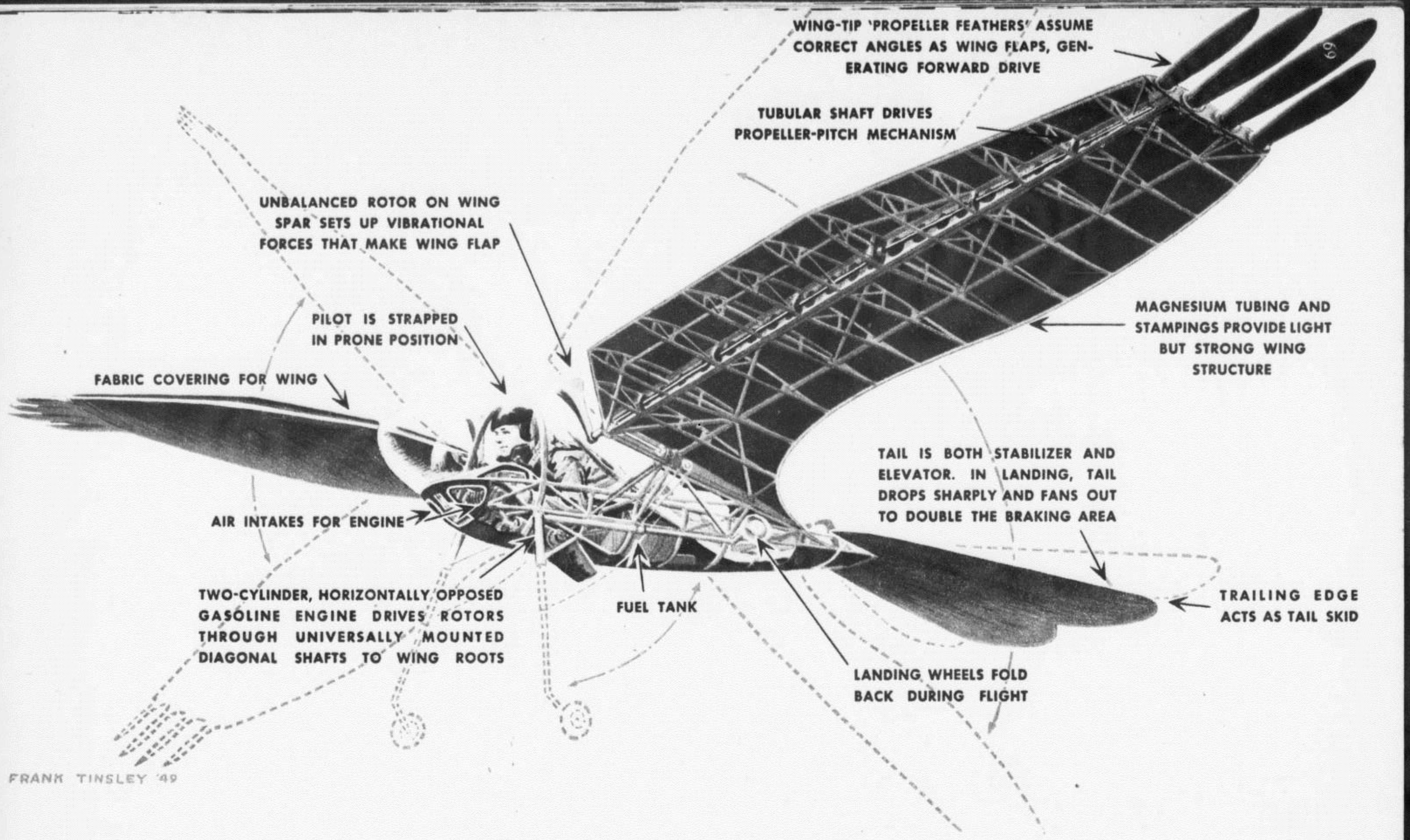
One day recently when Stolzenberger was test-flying a mechanical bat, the model slipped away from him and darted out of an open door. Suddenly screams of terror shook the building. Stolzenberger dashed down the hall and found hysterical secretaries scrambling out of a near-by office where his lifelike bat was flitting overhead.

Following up his vibrating-wing idea, Stolzenberger has just patented a large man-carrying machine that promises to be the world's first successful ornithopter. On these pages MI presents its own design of a practical flap-wing flyer, based on principles similar to those revealed in Stolzenberger's remarkable experiments.

A light-weight, twin-cylinder gasoline engine, fitted with a clutch and reduction gears, powers MI's ornithopter. Through flexibly connected shafts to each wing, the motor drives a pair of wing-mounted rotors. The unbalanced spinning of these rotors provides the vibrational force for flapping the wings. Facing to the rear and set at a slight downward angle, the engine is mounted in the deep, birdlike "breast" of the ornithopter's body. Air inlets, ducts and a controllable discharge vent, cool the powerplant.

Fuel, carried in the belly of the machine, is pumped up through a small header tank beneath the pilot's chin-rest, then down to the engine. A yank on pull rope, such as you use for an outboard motor, starts the engine. Instruments and controls are immediately above the powerplant and directly connected to it. The drive shafts, springing diagonally from either side of the gear box, are mounted universally and through their upper ends tie in with the rotor shafts. An automatic safety locks the wings at the correct soaring angle whenever you unclutch the engine.

Except for the breast section, the bird-shaped fuselage is comparatively shallow. It's barely large enough to hold the pilot comfortably. Built of a glass plastic, over a light magnesium frame, the fuselage is molded to fit the body. For greater comfort, the interior is lined with airfoam rubber. The upward angle of this narrow, horizontal cockpit, padded arm troughs, control positions and chin-rest follow the lines of the new Air Force "prone-pilot bed." Safety straps, stirrup foot rests and high, gull-type wing roots on either side hold the pilot [*Continued on page* 156]


WING-TIP 'PROPELLER FEATHERS' ASSUME CORRECT ANGLES AS WING FLAPS, GENERATING FORWARD DRIVE
TUBULAR SHAFT DRIVES PROPELLER-PITCH MECHANISM
UNBALANCED ROTOR ON WING SPAR SETS UP VIBRATIONAL FORCES THAT MAKE WING FLAP
PILOT IS STRAPPED IN PRONE POSITION
FABRIC COVERING FOR WING
MAGNESIUM TUBING AND STAMPINGS PROVIDE LIGHT BUT STRONG WING STRUCTURE
TAIL IS BOTH STABILIZER AND ELEVATOR. IN LANDING, TAIL DROPS SHARPLY AND FANS OUT TO DOUBLE THE BRAKING AREA
AIR INTAKES FOR ENGINE
TRAILING EDGE ACTS AS TAIL SKID
TWO-CYLINDER, HORIZONTALLY OPPOSED GASOLINE ENGINE DRIVES ROTORS THROUGH UNIVERSALLY MOUNTED DIAGONAL SHAFTS TO WING ROOTS
FUEL TANK
LANDING WHEELS FOLD BACK DURING FLIGHT
FRANK TINSLEY '49

MONORAILROAD TRAIN ... jet-powered

WHEN certain designs now in the drawing-board stage are finally completed, you may find yourself whizzing cross-country at over 400 mph in a super "El."

Combine the speed of an airliner, the safety of a trolley and the comfort of a Pullman—and you've got the formula for this revolutionary, suspended monorailroad, powered by jets.

The single-railed train could hurtle from coast-to-coast in less than 10 hours. Two jet engines, with auxiliary rockets or Jato units, would do the trick.

Over 100 passengers would be carried in one three-coach train, making only one stop for refueling at the halfway point. The coaches would be pressurized, air-conditioned and equipped with safety belts for whisking down mountains. Overhead rail-grippers would be suspended on stanchions dotted across the nation in a New York to California system. •

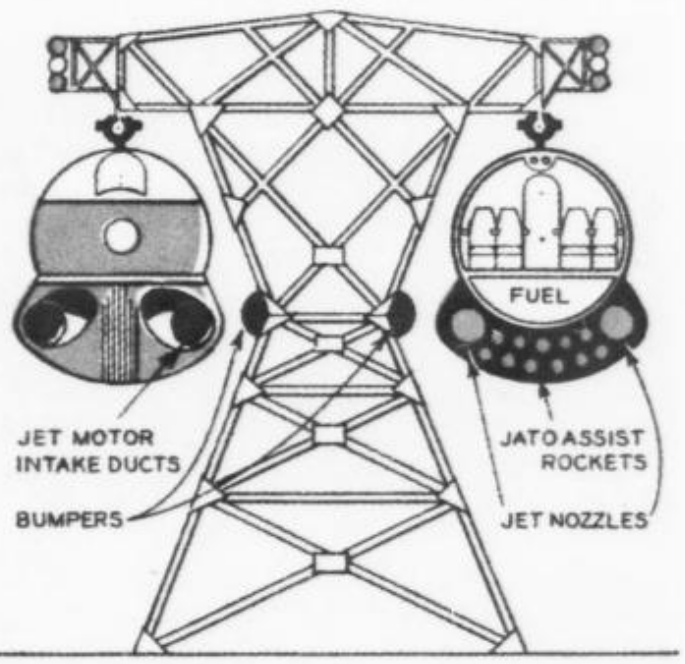
SEE CROSS-SECTION OF RAIL-GRIP SLIPPERS

TUBULAR MONORAIL

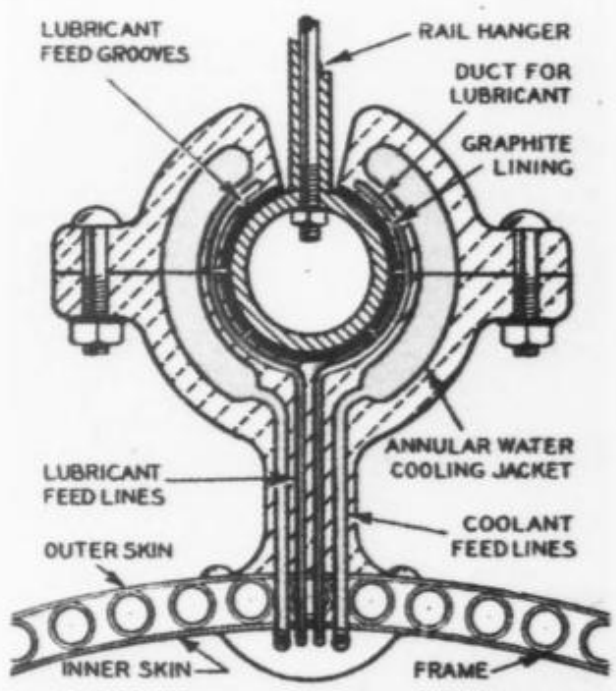
JET ENGINE INTAKE DUCTS

BUMPER

DOUGLAS ROLPE



CROSS-SECTION AND SUSPENSION PLAN



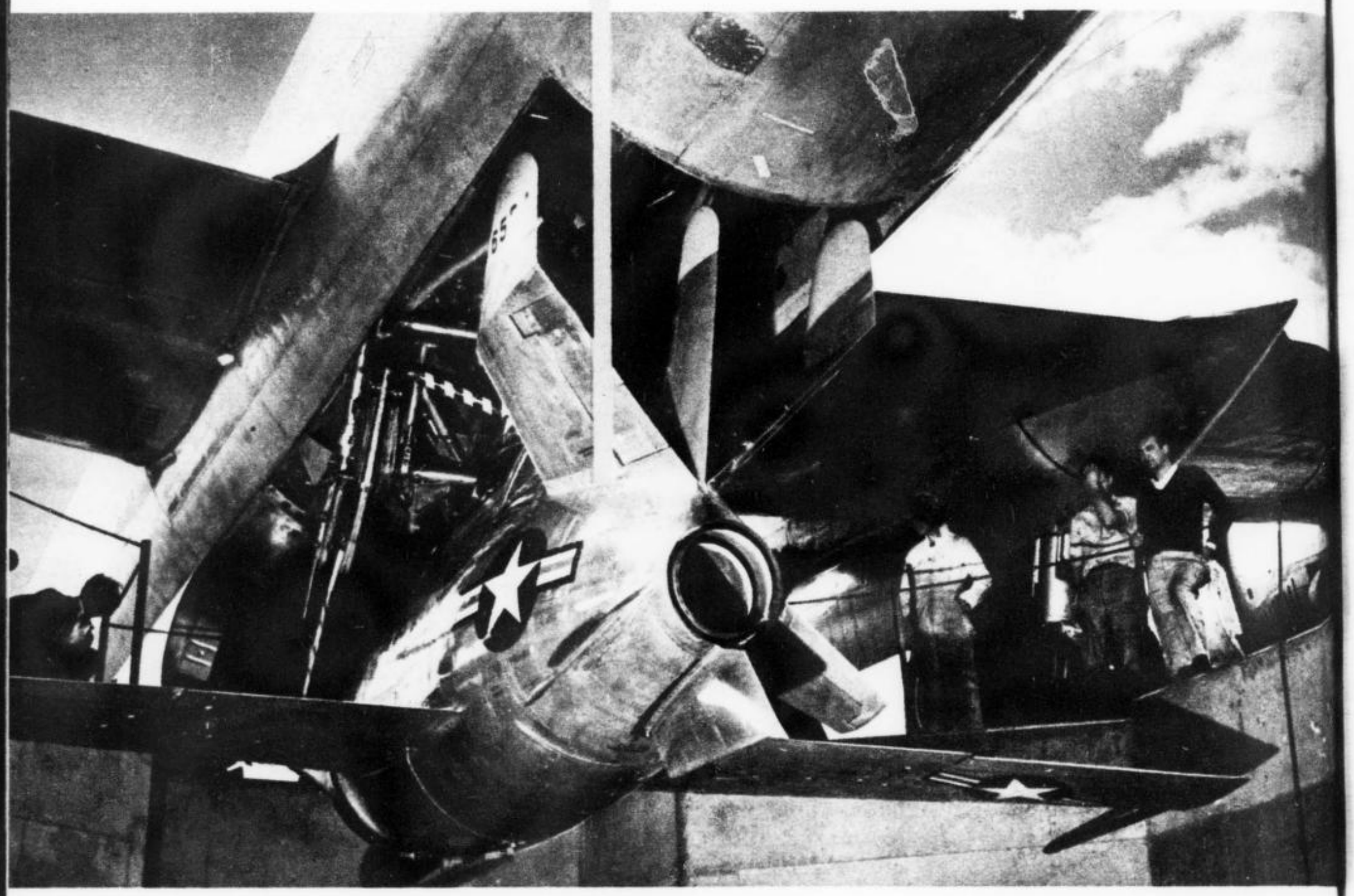
CROSS SECTION THRU RAIL-GRIP SLIPPER

Two powerful jet engines with auxiliary solid fuel rockets or Jato units for help in starting and climbing would be used.

All-weather, rail-gripping slippers would be water or Prestone-cooled and lubricated under pressure.

COVER STORY

Floating up from the loading pit on the mother B-29's landing trapeze, the bent-finned XF-85 looks more like a flying bomb than a fighter.

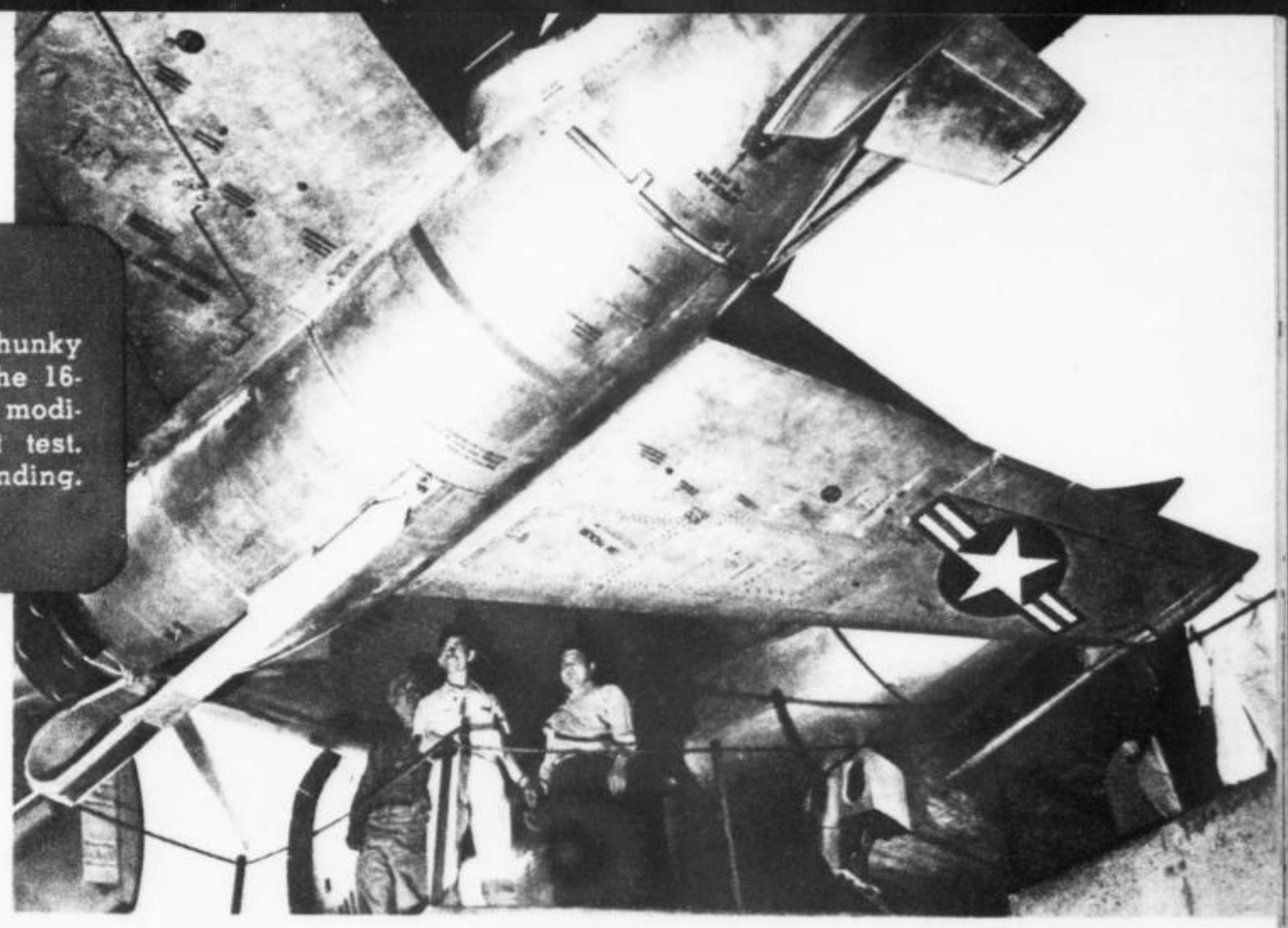


B-36 bomber, below, will pack three Goblins in its kangeroo pouch.

'The PLANE on the Flying Trapeze'

EIGHT miles above the California desert near Muroc a B-29 opened its bomb bay and gave birth to a Goblin, the Air Force's sensational parasite jet fighter. As the bomb-shaped XF-85 teetered at the end of an extended trapeze, the sweptback wings folded out flat in the 300-mph air-stream. Suddenly the fighter unhooked and darted ahead into the blue. After buzzing around the sky in a test flight, Pilot Ed Schoch throttled down to return to base—back on the trapeze. On MI's cover you see the first record in color of the parasite jet landing aboard the kangeroo bomber.

Because the new round-the-world bombers far outranged any *land-based* fighters, the Air Force and the McDonnell Aircraft Corp. developed the XF-85 as a unique *air-based* jet to protect the giant B-36. Parasites soon will be using B-36s as flat-tops. So, enemy fighters take note: *The Goblins will get you if you don't watch out.* •



It's a tight fit as the chunky 15-foot jet eases into the 16-foot bomb bay on the modified B-29 for a flight test. Ski skid is for crash landing.

Head-on, the grounded Goblin shows its jet mouth which sucks in air for its Westinghouse J-34 turbine. Wheels aren't landing gear but a dolly for land-handling the jet.

The big skyhook pops up from the Goblin's nose and balances the tiny fighter on the bomber's flying trapeze for an acrobatic landing or launching miles above earth.

MECHANIX ILLUSTRATED

A FAWCETT PUBLICATION

W. H. FAWCETT, JR. president **ROGER FAWCETT** general manager **ROSCOE K. FAWCETT** circulation director
GORDON FAWCETT secretary-treasurer **RALPH DAIGH** editorial director
JAMES B. BOYNTON director of advertising **AL ALLARD** art director **RALPH MATTISON** associate art director

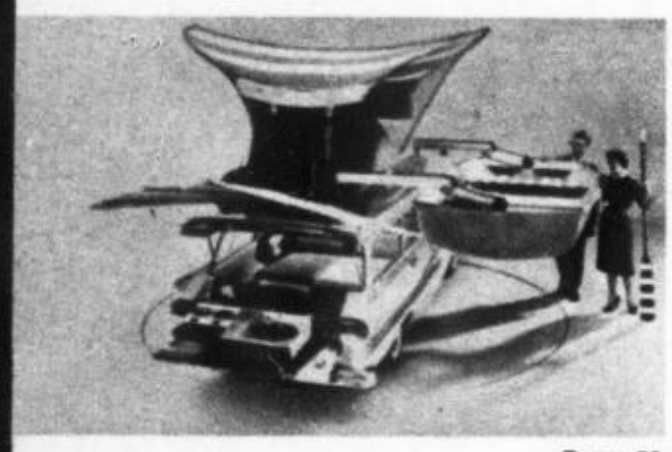
WILLIAM L. PARKER editor **ROBERT G. BEASON** assistant editor

LAWRENCE SANDERS.....feature editor
J. ROBERT CONNOR.....news editor
HARVEY GARDNER.....science editor
HELEN E. SLOWIN....production director

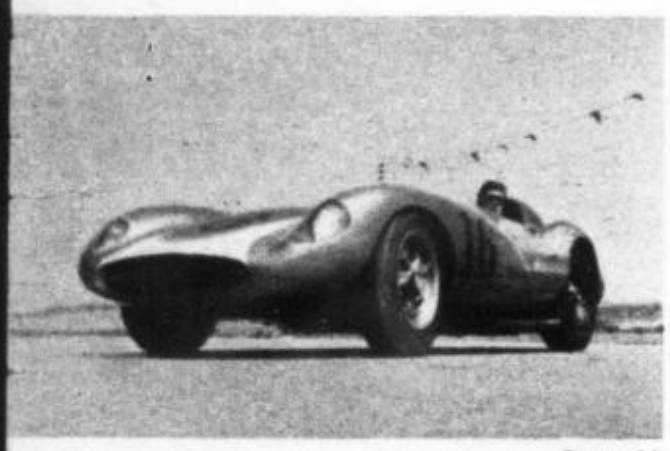
ROBERT BRIGHTMAN home and shop editor
JOHN J. SMITH.....associate editor
DICK HOWE.....associate editor

LEONARD ULINE .....art editor
WALTER MESAROS .....art associate
VINCENT TROIANO .....art assistant
ED BRANDON .....art assistant

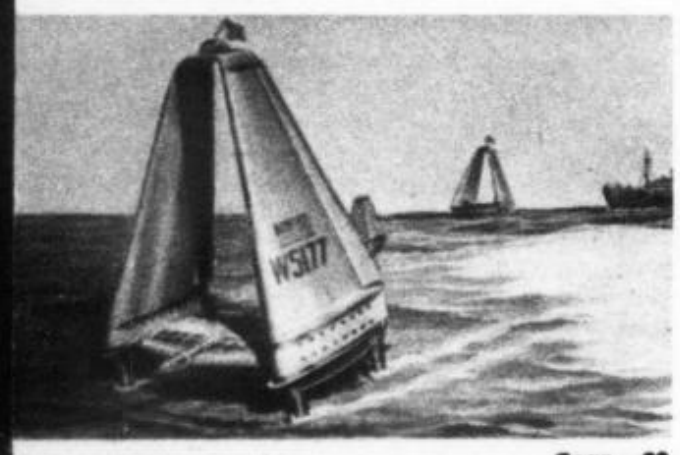
JOHN WEBSTER eastern advertising manager



Page 60



Page 88



Page 90

SPECIAL FEATURES

Winners Of MI's $75,000 Contest 24
Hypnotize Yourself To A Better Life
Leslie LeCron and Ben Benson 49
Preview Of The 1959 Cars.....*Stanley H. Brams* 54
Station Wagon Camping.....*J. Robert Connor* 60
Cure For Homeowners' Headaches.....*Bob Willett* 68
All-American Sports Car.....*Griffith Borgeson* 88
Air-Wing Sailing Ship.....*Frank Tinsley* 90

TOM McCAHILL

Mail For McCahill..... 43
Tests The Volvo..... 72
Sounds Off On The Auto Slump..... 76

REGULAR FEATURES

Inventions Wanted! 53
Eye Stoppers 56
Bright Idea Award: Auto Cooler..... 57
MMI: He's Cleaning Up With "Wash-'n-Dri"
William Macfarlane 58
Hunting And Fishing:
Catching Panfish For Fun—And Food.....*Wynn Davis* 70
Mimi 81
It's New! 84

SHORT FEATURES

Space Camera 52
Motorized Hummingbird 80
Houseboat On Wheels 82

DEPARTMENTS

Invention Clinic 12
Dear Editor 14
It's Coming! 25
Science Shorties 27
Help Wanted 48

(CONTINUED ON PAGE 10)

AUGUST 1958

VOLUME 54, NUMBER 8

Cover photo courtesy Ford Motor Co.

Permission hereby granted to quote from this issue of this magazine on radio or television, provided a total of not more than 1,000 words is quoted and credit is given to the title of the magazine and issue, as well as the statement, copyright 1958, by Fawcett Publications, Inc.

MECHANIX ILLUSTRATED is published monthly by Fawcett Publications, Inc., Fawcett Building, Fawcett Place, Greenwich, Conn. Editorial offices: 67 W. 44th St., New York 36, N. Y. Advertising offices: 67 W. 44th St., New York 36, N. Y.; 612 N. Michigan Ave., Chicago 11, Ill.; Townsend, Millsap & Co., 159 S. Vermont Ave., Los Angeles 4, Cal. and 110 Sutter Street, San Francisco 4, Cal.; 1659 Guardian Bldg., Detroit 26, Mich.; Hale Printup Asso., Langford Bldg., Miami 32, Fla. Entered as second class matter at the post office at Greenwich, Conn., under the act of March 3, 1879, with additional entry at Louisville, Ky. Printed in U. S. A. Title registered in the U. S. Patent Office.

Copyright 1958 by Fawcett Publications, Inc. Reprinting in whole or in part forbidden except by permission of the publishers. Address manuscripts to New York editorial office. Unacceptable contributions will be returned if accompanied by sufficient first class postage. Not responsible for lost manuscripts or photos. All remittances and correspondence concerning subscriptions as well as notification of change of address should be addressed to MECHANIX ILLUSTRATED Circulation Dept., Fawcett Place, Greenwich, Conn. Price 25c a copy. Subscription price $3.00 per year in the U. S. and possessions and Canada. All other countries $6.00 per year. Subscription price to members of the armed forces $2.75 per year. Foreign subscriptions and sales should be remitted by International Money Order in U. S. funds payable at Greenwich, Conn.

MEMBER AUDIT BUREAU OF CIRCULATIONS

POSTMASTER: Send Form 3579 to Fawcett Building, Greenwich, Conn.

AUTO COOLER

COOL drivers are better than hot ones on torrid days and the new Wright evaporative auto cooler may be just the thing to ease the discomfort of summer motoring. The cooler takes only a small amount of space and operates on the road or parked. It plugs into the cigarette lighter and can also be used in a motel, home or office with a small accessory transformer. Available in 6- or 12-volt models, it is made by the Wright Manufacturing Co., Phoenix, Ariz. Approximately $54.95. •

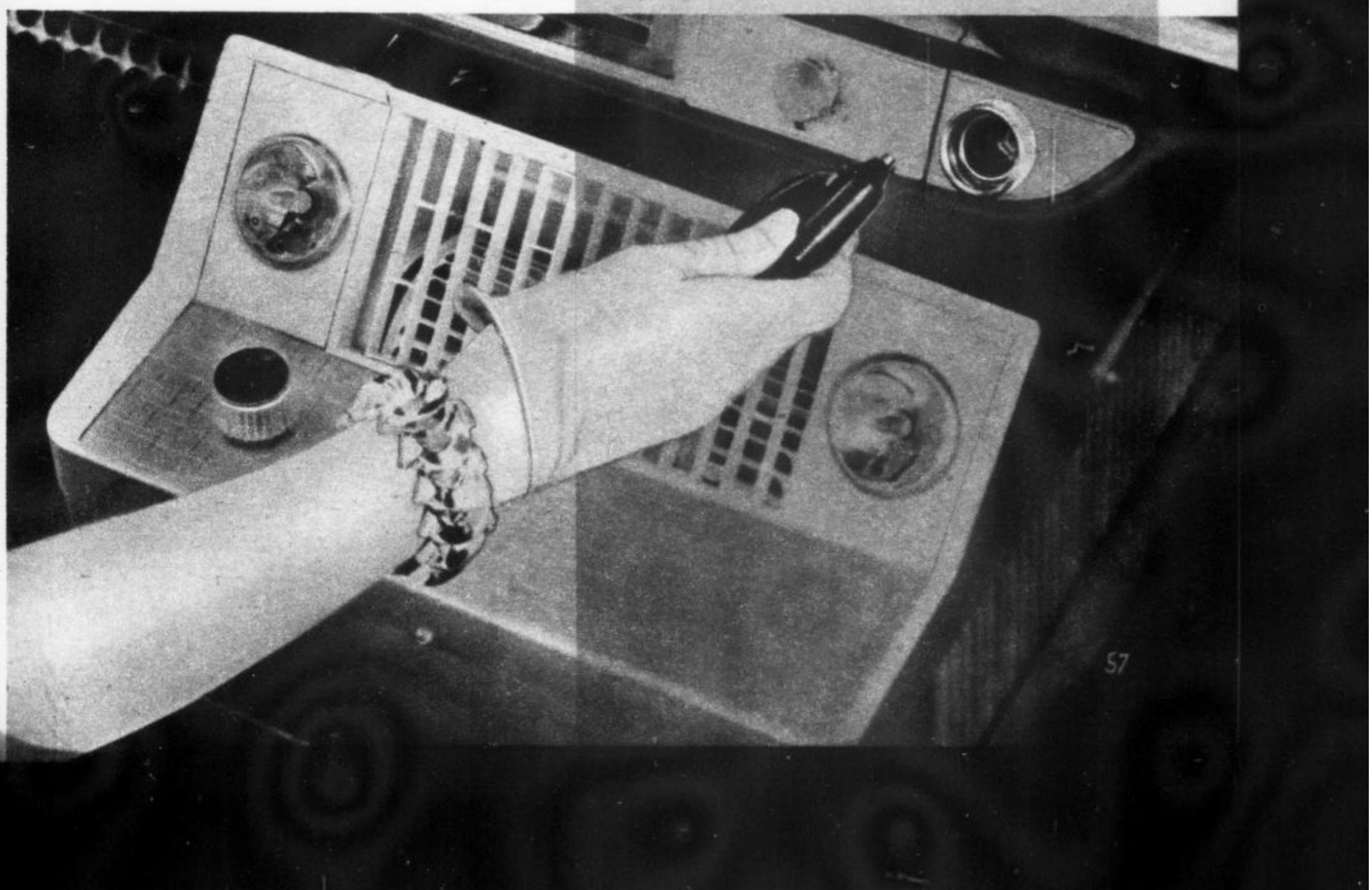
MECHANIX ILLUSTRATED BRIGHT IDEA AWARD

PORTABLE cooler has evaporative unit filter which keeps passengers cool, refreshed on road.

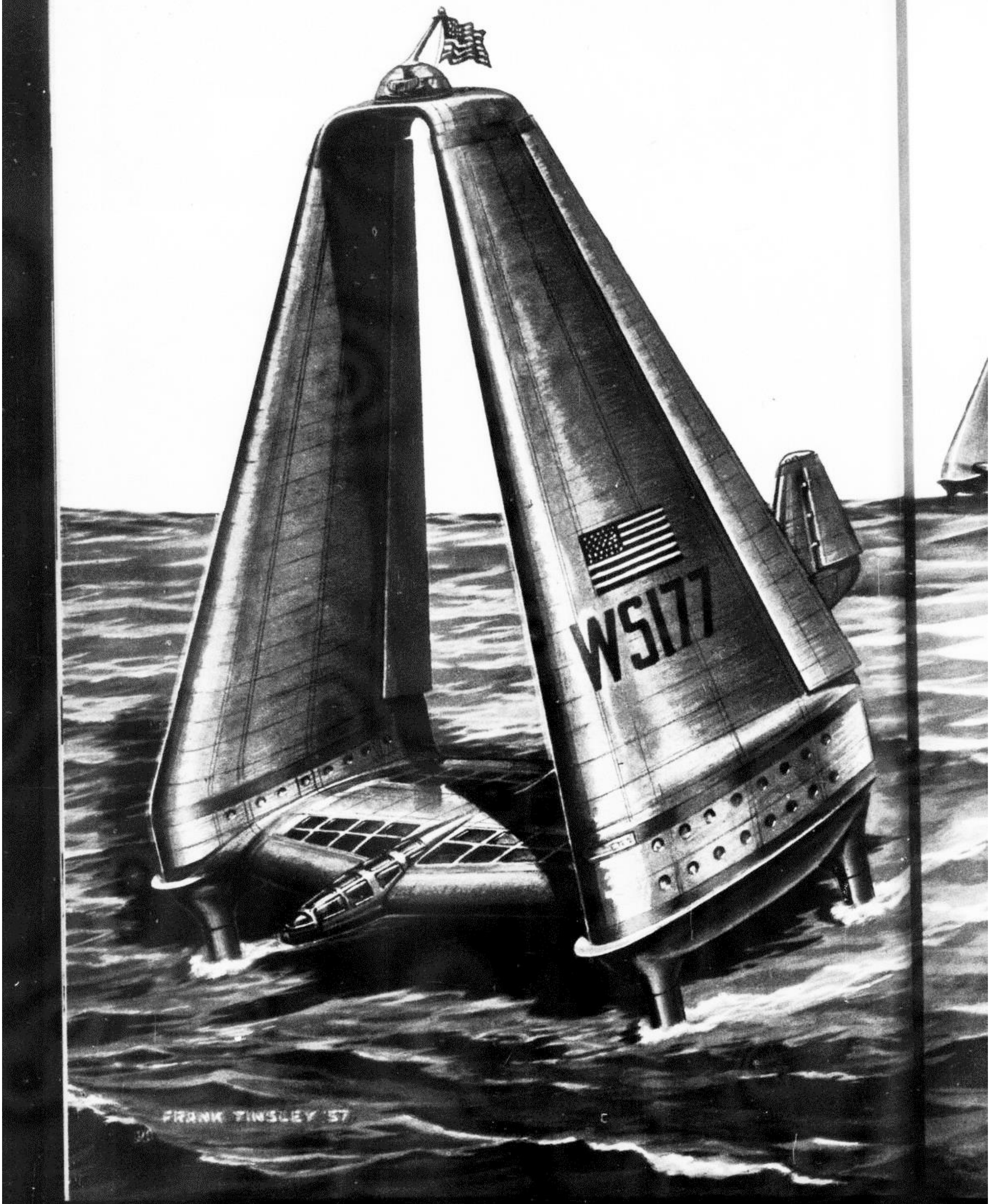
COOLER operates when plugged into cigarette lighter, works even when your car is parked.

WIN $50

MI will award $50 each month to the first person who tells us of a new and useful gadget that is patented and in production. Manufacturers are also eligible for this award. Pictures and a description should be sent to Bright Ideas Editor, Mechanix Illustrated, 67 West 44th Street, New York 36, N. Y.

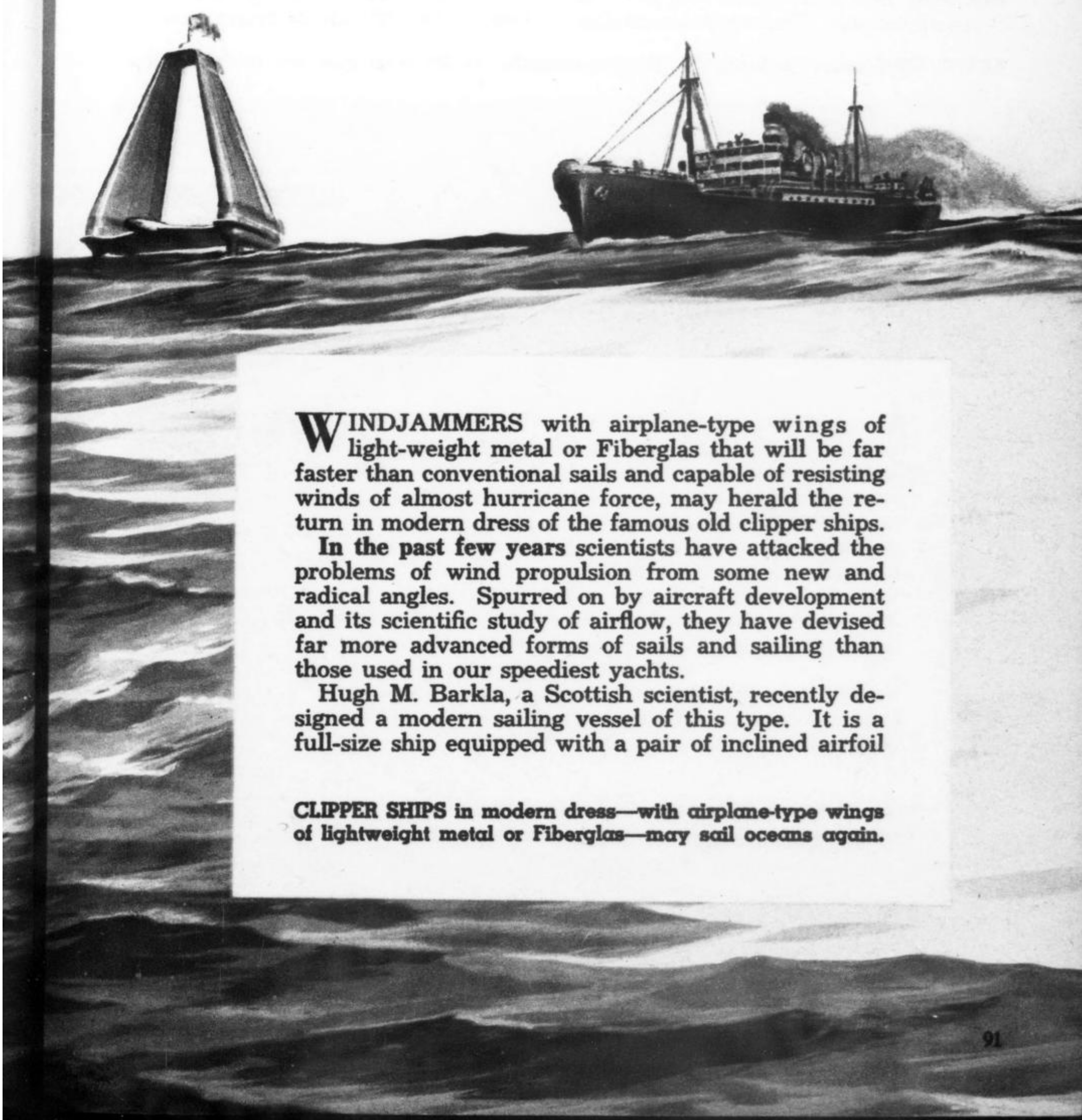


AIR-WING



SAILING SHIP

By Frank Tinsley



WINDJAMMERS with airplane-type wings of light-weight metal or Fiberglas that will be far faster than conventional sails and capable of resisting winds of almost hurricane force, may herald the return in modern dress of the famous old clipper ships.

In the past few years scientists have attacked the problems of wind propulsion from some new and radical angles. Spurred on by aircraft development and its scientific study of airflow, they have devised far more advanced forms of sails and sailing than those used in our speediest yachts.

Hugh M. Barkla, a Scottish scientist, recently designed a modern sailing vessel of this type. It is a full-size ship equipped with a pair of inclined airfoil

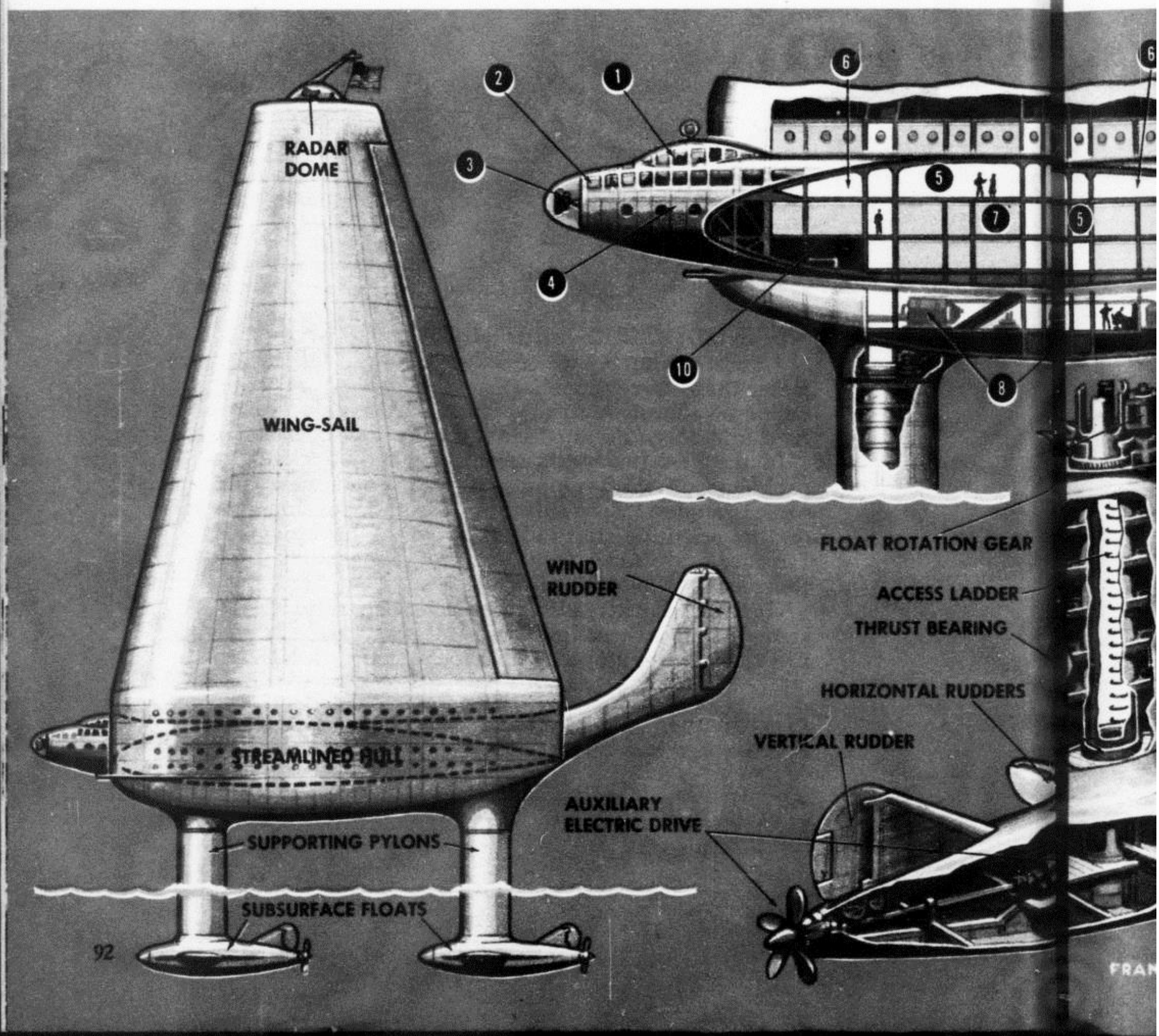
CLIPPER SHIPS in modern dress—with airplane-type wings of lightweight metal or Fiberglas—may sail oceans again.

sails that join at the top to form an enclosed lookout post. Riding on four steerable sub-surface pontoons, it is capable of carrying considerable loads at speeds of 30 to 40 knots. Passengers or cargo are carried in a flat transverse body that connects the bases of the sails. Set well above the wave tops, it is streamlined to reduce air resistance and may even be built in wing-section form to develop a degree of lift. By thus relieving the pontoons of a portion of the ship's weight, it could increase the speed immeasurably.

MI has designed a wing-type passenger ship based on Barkla's general configuration and including some of its qualities, but with a few unique features all its own. The wings are similar to Barkla's but are fitted with trailing-edge flaps to increase their efficiency. They join at the top where a hemispherical crow's nest is enclosed on a watch platform containing a radar scanner rotating on a 360° track. Angling back from the center of the Plexiglas dome is a jackstaff from which the ship's ensign is flown. Access to this modern lookout post is by an electric elevator inside the wing.

In section, the transverse connecting body is a high-lift airfoil containing three passenger decks. Additional cabins are fitted into the vertical bases of the twin wings. Glazed sundecks and spacious public rooms occupy the upper deck with sleeping quarters below. Inflatable life rafts are carried in

KEY: 1. Pilot house. 2. Bridge. 3. Bow searchlight. 4. Officer's quarters. 5. Public rooms.



the shallow trailing-edge.

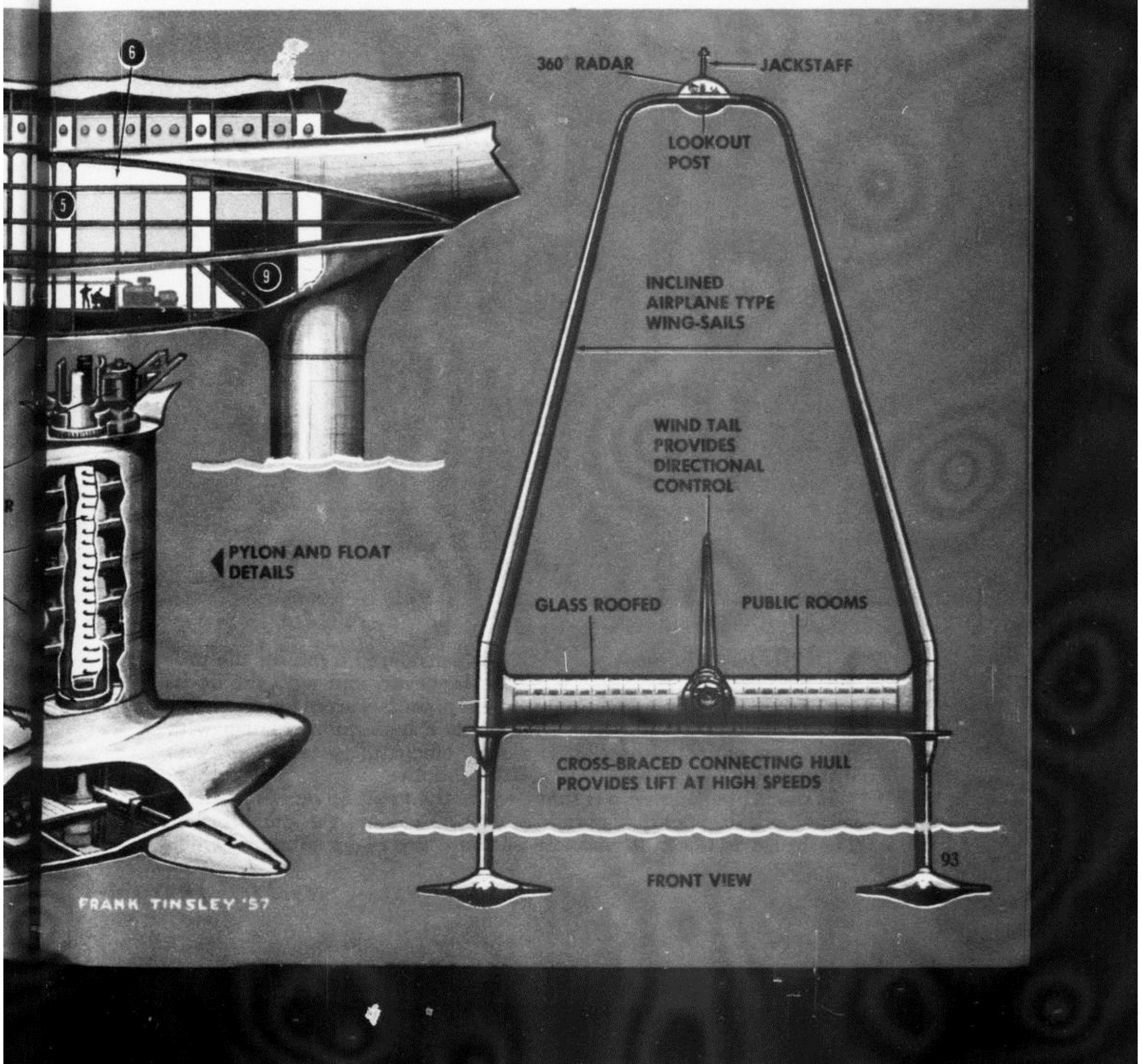
The ship is supported by four underwater floats, flattened in section to provide a degree of lift. In sailing various courses, these floats are electrically rotated to set the sails at a correct wind angle. The ship thus appears to sail slightly crabwise (as shown in the illustration). The floats are equipped with vertical rudders and depth controlling flippers, all operated by a pre-set autopilot. Electrically driven propellers provide auxiliary power for docking and windless weather, working on current generated by twin gas turbines set low in the bases of the wings.

If the scientific experiments are correct and full scale vessels perform as well as the small boat prototypes, winged sailing ships of this type may ride the waves again.

MI's unique sailing ship would provide its passengers with a sweeping view of the ocean from the spacious and many-windowed observation deck. And the public rooms would offer ample opportunity to relax on the swift voyage across the sea. This ultramodern sailing ship would also be another feather in the cap of America's rich sea-going heritage.

Cheaper to build, requiring almost no fuel and operating with small crews, an air-wing sailing ship could transport passengers and cargo at unusually low rates by today's standards and would travel at speeds unattained by our present super-powered vessels. •

6. Observation decks. 7. Cabins. 8. Auxiliary engines. 9. Water tanks. 10. Cargo space.



BUILD A MODERN VACATION HOME FOR $275

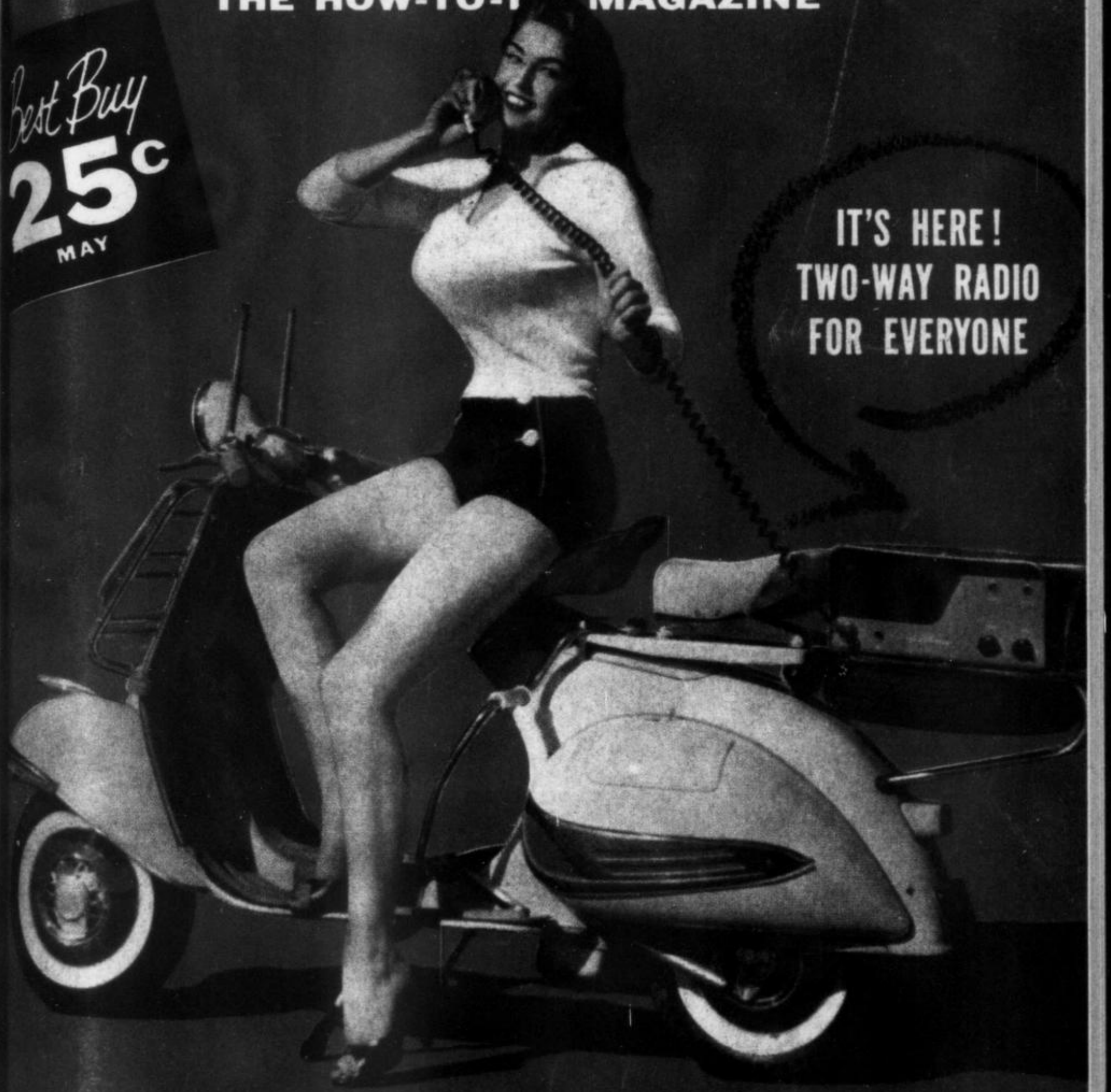
PUBLIC LIBRARY
REFERENCE
2nd FLOOR

MECHANIX ILLUSTRATED

THE HOW-TO-D MAGAZINE

Best Buy
25c
MAY

IT'S HERE!
TWO-WAY RADIO
FOR EVERYONE



HOW GOOD IS THE NEW NYLON RIFLE?

MECHANIX ILLUSTRATED

A FAWCETT PUBLICATION

W. H. FAWCETT, JR. president
GORDON FAWCETT secretary-treasurer
GEORGE H. CARL production director

ROGER FAWCETT general manager
RALPH DAIGH editorial director
AL ALLARD art director

ROSCOE K. FAWCETT circulation director
JAMES B. BOYNTON director of advertising
RALPH MATTISON associate art director

WILLIAM L. PARKER editor

ROBERT G. BEASON assistant editor

LAWRENCE SANDERS.....feature editor
J. ROBERT CONNOR.....news editor
HARVEY GARDNER.....associate editor
HELEN E. SLOWIN.....production editor

ROBERT BRIGHTMAN home and shop editor
JOHN J. SMITH.....associate editor
DICK HOWE.....associate editor

JOHN WEBSTER advertising manager

LEONARD ULINE .....art editor
WALTER MESAROS .....art associate
VINCENT TROIANO .....art assistant
ED BRANDON .....art assistant

SPECIAL FEATURES

Two-Way Radio For Everyone ..... *Robert Hertzberg* 57
Mr. Blanc's Sports Car 62
MI Tests The New Nylon Rifle ..... *Robert Hertzberg* 66
Outer Space Mirrors ..... *Frank Tinsley* 70
Swimming Pool On Wheels ..... *Louis Hochman* 78
MI Day At Daytona 88

TOM McCAHILL

Mail For McCahill 45
Speed Weeks '59 84
Tests The Simca Vedette 90

REGULAR FEATURES

MIMI 61
Hunting And Fishing: Best Way To Hook Flounder ..... *Wynn Davis* 64
Bright Idea: Disposable Gloves 68
It's New! 72
Inventions Wanted! 93
MMI: He's Stuck With Success ..... *Robert Edwards* 94

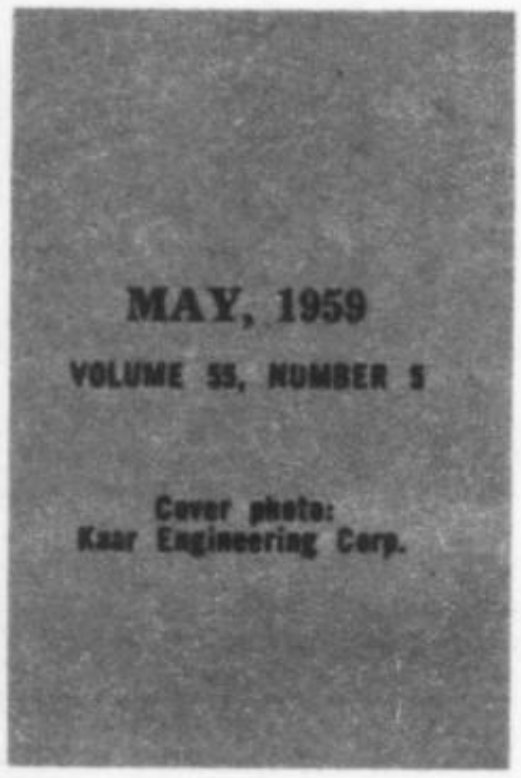
SHORT FEATURES

Little Handle—Big Lift/First Electric Helicopter 60
Now See This! 65, 76, 80, 95
Sky Spies/Shockproof Glasses 69
Peewee Weapons 77
Donkey Business 81
Texas Safety Boat 82

DEPARTMENTS

Dear Editor 14
Invention Clinic 18
Patents Granted 31
Science Shorties 32
Speaking Of Jobs: Model Maker 157

HOME-CRAFTS-SHOP CONTENTS ON PAGE 6



MAY, 1959

VOLUME 55, NUMBER 5

Cover photo:
Kaar Engineering Corp.

Permission hereby granted to quote from this issue of this magazine on radio or television, provided a total of not more than 1,000 words is quoted and credit is given to the title of this magazine and issue, as well as the statement, copyright 1959, by Fawcett Publications, Inc.

MECHANIX ILLUSTRATED is published monthly by Fawcett Publications, Inc., Fawcett Bldg., Greenwich, Conn.

ADDRESS ALL MAIL: Subscriptions, change of address, Form 3579 to Circulation Dept., Fawcett Bldg., Greenwich, Conn.; and all editorial and advertising to Fawcett Publications, Inc., 67 W. 44th St., New York 36, N. Y.

Second-class postage paid at Greenwich, Conn., and at additional mailing offices.

EDITORIAL OFFICES: 67 W. 44th St., New York 36, N. Y. ADVERTISING OFFICES: 67 W. 44th St., New York 36, N. Y.; 612 N. Michigan Ave., Chicago 11, Ill.; 1659 Guardian Bldg., Detroit 26, Mich.; 2978 Wilshire Blvd., Los Angeles 5, Calif.; 681 Market St., San Francisco 5, Calif.; 123 S. Broad St., Philadelphia 9, Pa.; Hale Printup & Associates, Langford Bldg., Miami 32, Fla. and 4087 Haverhill Dr., N.W., Atlanta, Ga.

Printed in U.S.A. Copyright 1959 by Fawcett Publications, Inc.

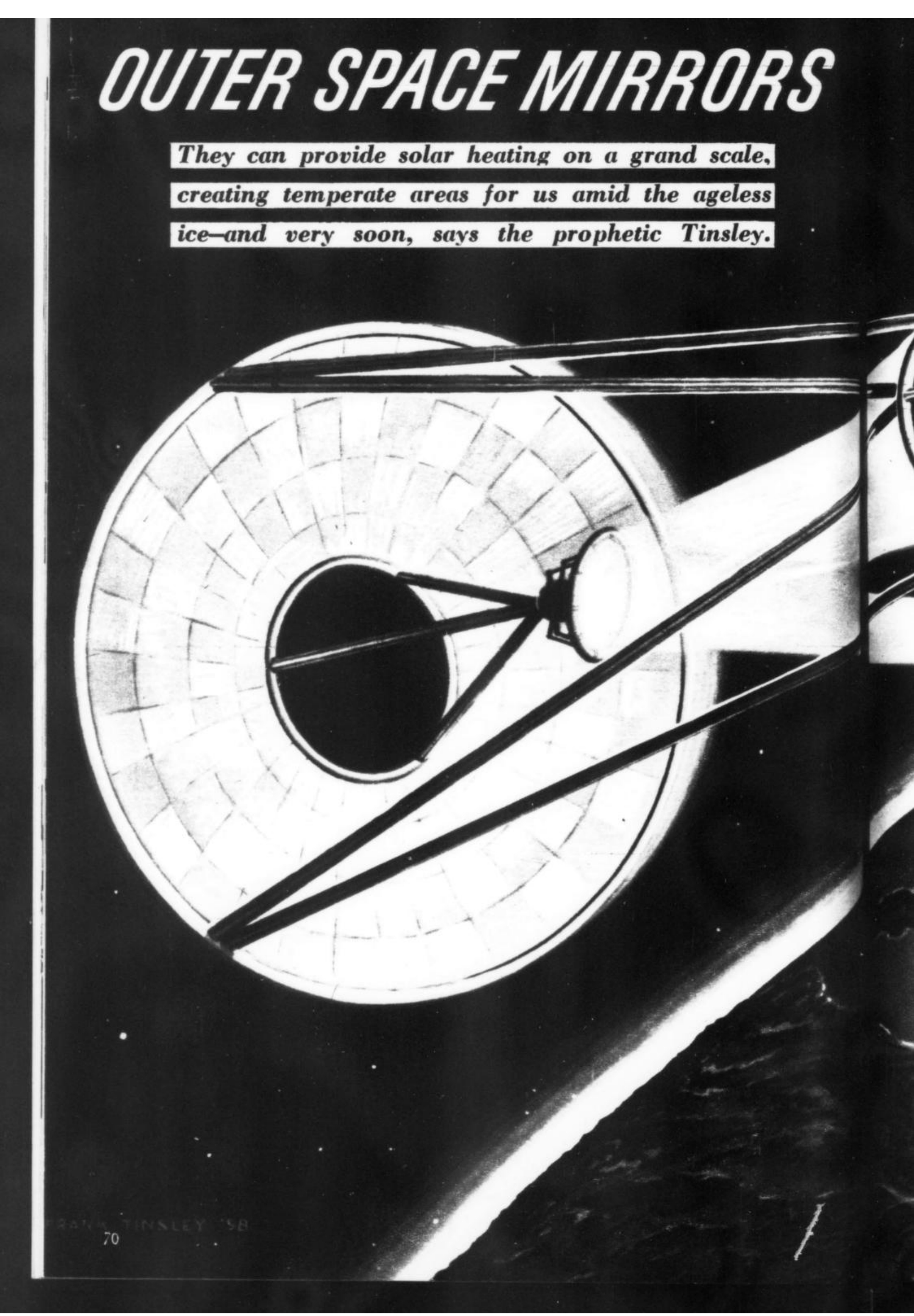
Reprinting in whole or in part forbidden except by permission of the Publishers. Address manuscripts to N. Y. editorial office. Unacceptable contributions will be returned if accompanied by sufficient first class postage. Not responsible for lost manuscripts or photos.

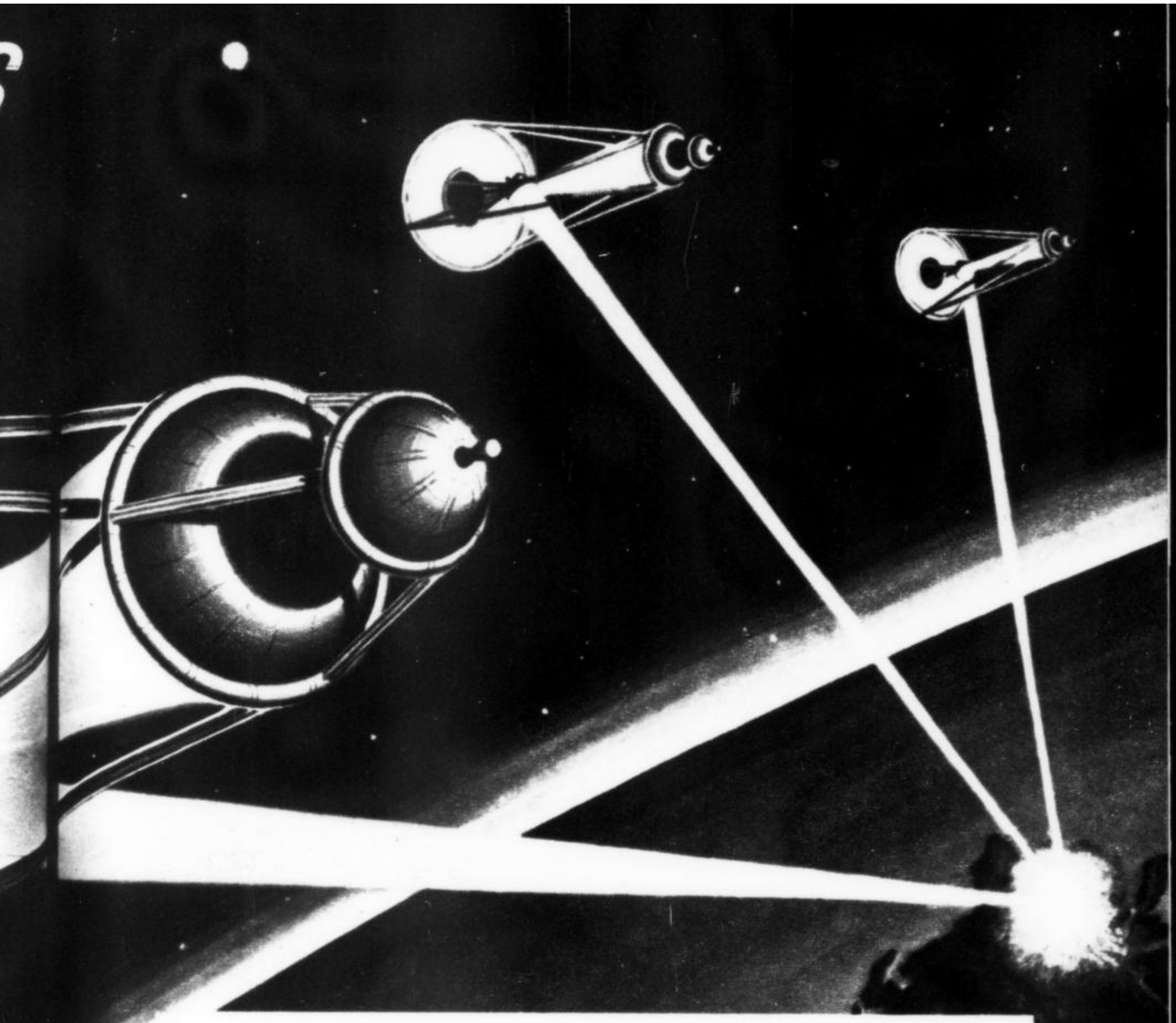
SUBSCRIPTION PRICE: 25c a copy. $3.00 a year in U.S., possessions and Canada. All other countries $6.00 a year. Subscription price to members of the armed forces $2.75 per year. Foreign subscriptions and sales should be remitted by International Money Order in U.S. funds payable at Greenwich, Conn.

MEMBER AUDIT BUREAU OF CIRCULATIONS

OUTER SPACE MIRRORS

They can provide solar heating on a grand scale, creating temperate areas for us amid the ageless ice—and very soon, says the prophetic Tinsley.





UNMANNED SATELLITES controlled from earth bases could be used to thaw out sites for submarine bases on the frozen Arctic coastline.

By Frank Tinsley

USING the sun's heat as a military weapon is not a new idea. The ancient Greeks, at the siege of Syracuse, developed a defense system of burning glasses to set fire to the ships of the Roman invaders. Hitler's rocketeers were working on designs for great, mile-wide mirror-satellites that would burn up whole cities from their orbits—which would have been impossible even if the Nazis' rocketry had been adequate at the time. But high on America's list of wonder-weapons is a similar moon-mirror that *could* do the job envisioned for it.

The German burning reflectors would, from their 5,000-mile altitude, have cast a mile-wide image of the sun on the earth's surface. An image that large cannot [*Continued on page* 154]

MECHANIX ILLUSTRATED

A FAWCETT PUBLICATION

W. H. FAWCETT, JR. president
GORDON FAWCETT secretary-treasurer
GEORGE H. CARL production director

ROGER FAWCETT general manager
RALPH DAIGH editorial director
AL ALLARD art director

ROSCOE K. FAWCETT circulation director
JAMES B. BOYNTON director of advertising
RALPH MATTISON associate art director

WILLIAM L. PARKER editor

ROBERT G. BEASON assistant editor

LAWRENCE SANDERS.....feature editor
J. ROBERT CONNOR.....news editor
HARVEY GARDNER.....associate editor
HELEN E. SLOWIN.....production editor

ROBERT BRIGHTMAN home and shop editor
JOHN J. SMITH.....associate editor
DICK HOWE.....associate editor

JOHN WEBSTER advertising manager

LEONARD ULINE .....art editor
JOSEPH DOYLE .....art associate
VINCENT TROIANO .....art assistant
ED BRANDON .....art assistant

SPECIAL FEATURES

Workhorses Of The Sky .....*Frank Tinsley* 57
How To Get Free Land In Alaska .....*Harry Kursh* 73
World's Largest Catamaran 78
Skin-Diving For Jade 86
Monkeys Shine In Outer Space 95

TOM McCAHILL

Mail For McCahill 47
Tests The British Land Rover 88
Tests The Toyopet 92

REGULAR FEATURES

Now See This! 62, 71, 91
MIMI 63
Bright Idea: Car-B-Cue 67
Eye Stoppers 68
Hunting And Fishing: Fly Fishing For Bass .....*Wynn Davis* 70
Inventions Wanted 80
MMI: He Files Boats .....*Richard Magruder* 81
It's New! 82

SHORT FEATURES

This Flying Saucer Really Flies! 64
Underwater Blimp 66
Antique Fender Bender 72
Rebirth Of The Autogiro 76
New Deep-Sea Camera 77

DEPARTMENTS

Dear Editor 18
Invention Clinic .....*Joseph Kraus* 22
Speaking Of Jobs: Roof Inspector 33

HOME-CRAFTS-SHOP CONTENTS ON PAGE 10

SEPTEMBER, 1959

VOLUME 55, NUMBER 9

Permission hereby granted to quote from this issue of this magazine on radio or television, provided a total of not more than 1,000 words is quoted and credit is given to the title of this magazine and issue, as well as the statement, copyright 1959, by Fawcett Publications, Inc.

MECHANIX ILLUSTRATED is published monthly by Fawcett Publications, Inc., Fawcett Bldg., Greenwich, Conn.

ADDRESS ALL MAIL: Subscriptions, change of address, Form 3579 to Circulation Dept., Fawcett Bldg., Greenwich, Conn.; and all editorial and advertising to Fawcett Publications, Inc., 67 W. 44th St., New York 36, N. Y.

Second-class postage paid at Greenwich, Conn., and at additional mailing offices.

EDITORIAL OFFICES: 67 W. 44th St., New York 36, N. Y. ADVERTISING OFFICES: 67 W. 44th St., New York 36, N. Y.; 612 N. Michigan Ave., Chicago 11, Ill.; 1659 Guardian Bldg., Detroit 26, Mich.; 2978 Wilshire Blvd., Los Angeles 5, Calif.; 681 Market St., San Francisco 5, Calif.; 123 S. Broad St., Philadelphia 9, Pa.; Hale Printup & Associates, Langford Bldg., Miami 32, Fla. and 4087 Haverhill Dr., N.W., Atlanta, Ga.

Printed in U.S.A. Copyright 1959 by Fawcett Publications, Inc.

Reprinting in whole or in part forbidden except by permission of the Publishers. Address manuscripts to N. Y. editorial office. Unacceptable contributions will be returned if accompanied by sufficient first class postage. Not responsible for lost manuscripts or photos.

SUBSCRIPTION PRICE: 25c a copy. $3.00 a year in U.S., possessions and Canada. All other countries $6.00 a year. Subscription price to members of the armed forces $2.75 per year. Foreign subscriptions and sales should be remitted by International Money Order in U.S. funds payable at Greenwich, Conn.

MEMBER AUDIT BUREAU OF CIRCULATIONS

WORKHORSES of the Sky

By Frank Tinsley

HOW would you like to pick up your summer cottage and move it to Florida for the winter? Or, during the dog-days of August, loft it to some cool wilderness lake? Or would you prefer to airlift your comfortable houseboat across the wilds of Canada and, in a matter of hours, set her down on one of the uncrowded inlets of Hudson's Bay? What a way that would be to spend a wonderful vacation!

Sound crazy? It might have seemed so a year or two ago but not now. The advent of a practical sky-hook, a power-packed "flying crane" built to lift and carry heavy loads, has revolutionized our ideas about transportation. Long dreamed of by industrialists, construction

engineers and the military forces, a flying towboat is now being tested at the Army's helicopter center at Fort Bragg, N. C. It is only an experimental model, put together with off-the-shelf parts of other copters. But even this preliminary model can hoist a six-ton load right out of a basket and fly it anywhere in the country.

Like the first practical helicopter, the 1939 VS-300, the new S-60 flying crane (see preceding page and the front cover) is a product of Sikorsky engineering genius. It combines the five-bladed rotor and twin reciprocating powerplants of the S-56 Marine troop carrier, with a stripped down, girder-like body. At the front end of this lifting beam is an underslung cabin for the crew and at the other, the tail surfaces and trim rotor. Completely surrounded by glass for maximum visibility, the pilot perches in a unique swivelling seat. During the jockeying necessary to latch on to a load, he can face backward to keep an eye on his target. After take-off, he swings around and faces forward for flight. Simple—but new!

This S-60 has been a fast mover. Emerging from the assembly hangars at Stratford, Conn., in April, it headed for an Army helicopter exhibition at Fort Bragg to show what it could do. It air-lifted missiles, planted rows of two-ton telephone poles and lowered 4,500-pound floor sections in place on an army pontoon bridge. Currently, it is undergoing a complete program of flight testing.

Although the S-60 provides an immediate, moderate-cost answer to the flying crane problem, Sikorsky engineers

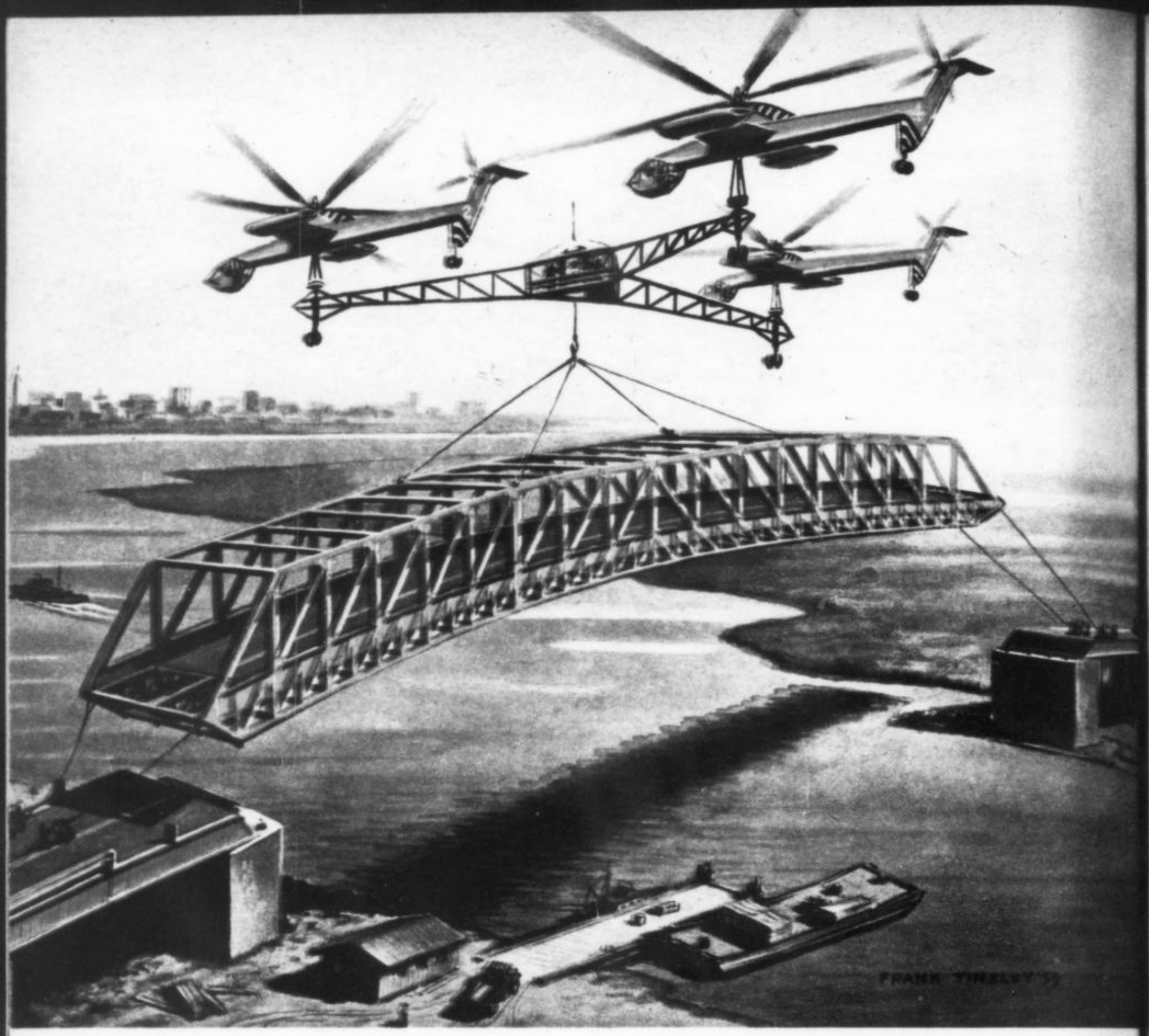
NIGHTCLUB in the sky tours over city, suspended from a multiple hitch of flying cranes.

COMMUTER COPTER, designed for short haul service, has a bus-like pod slung underneath.

are far from satisfied. Far larger and more powerful models are taking shape on their drawing boards, incorporating a wide variety of forms and powerplants. Among them is a twin-boom configuration that eliminates the tail fin and wheel to permit free access from the rear. Cargo and passenger pods can be backed into position and hooked up with ease and accuracy. Various types and combinations of gas turbines are under consideration, including General Electric T-64s and Pratt & Whitney JT-12s. These high-power, lightweight engines, driving outsized six-bladed rotors, promise a tremendous stepup in lifting capacity within the next year or so. Some of the models now in the design stage are expected to carry loads up to 50 tons.

"Such machines," says Lee S. Johnson, Sikorsky general manager, "could revolutionize the transportation business." He sees the military and commercial uses of the aerial crane "limited only by man's imagination." MI's editors agree and some of these future possibilities are explored and illustrated here. Special consideration has been given to extending their prospective earning power. With this in mind, let's move ahead to 1965 and take a look at a typical day in the life of a flying crane.

The "little" 25-tonners start their daily chores in the thousands of suburban communities surrounding our major cities. Instead of the commuter heading for the railroad station in his own car, tomorrow's wage slave will pick up his briefcase and stroll to a



BRIDGE BUILDING and other construction jobs would be a simple task for cranes in tandem.

nearby street corner or road junction. There he boards a streamlined vehicle resembling a trailer bus towed by a light prime mover. It accommodates 100 or more commuters, seated three abreast on either side of a central aisle.

After a few more stops, the bus heads for the community heliport. There, straddling the take-off circles, are three or four flying cranes, each scheduled for a different midtown landing point. The bus is backed beneath its appropriate crane, locked into place and the conglomerate machine, now resembling a conventional passenger copter, takes off. Fifteen minutes later, it slants downward to a rooftop landing and the commuters race for the elevators.

Our crane can then return to the suburb for later rush-hour loads or, still retaining its passenger pod, be diverted to an inter-city run. Or it may change character completely. Dropping off the pod at an outlying parking field, it could proceed to a regular construction job or be scheduled for a private hauling chore. During the spring months, for instance, boats too heavy for road trailing could be airlifted from inland points and launched at selected harbors. In the fall, they will make the return trip to the owner's back yard.

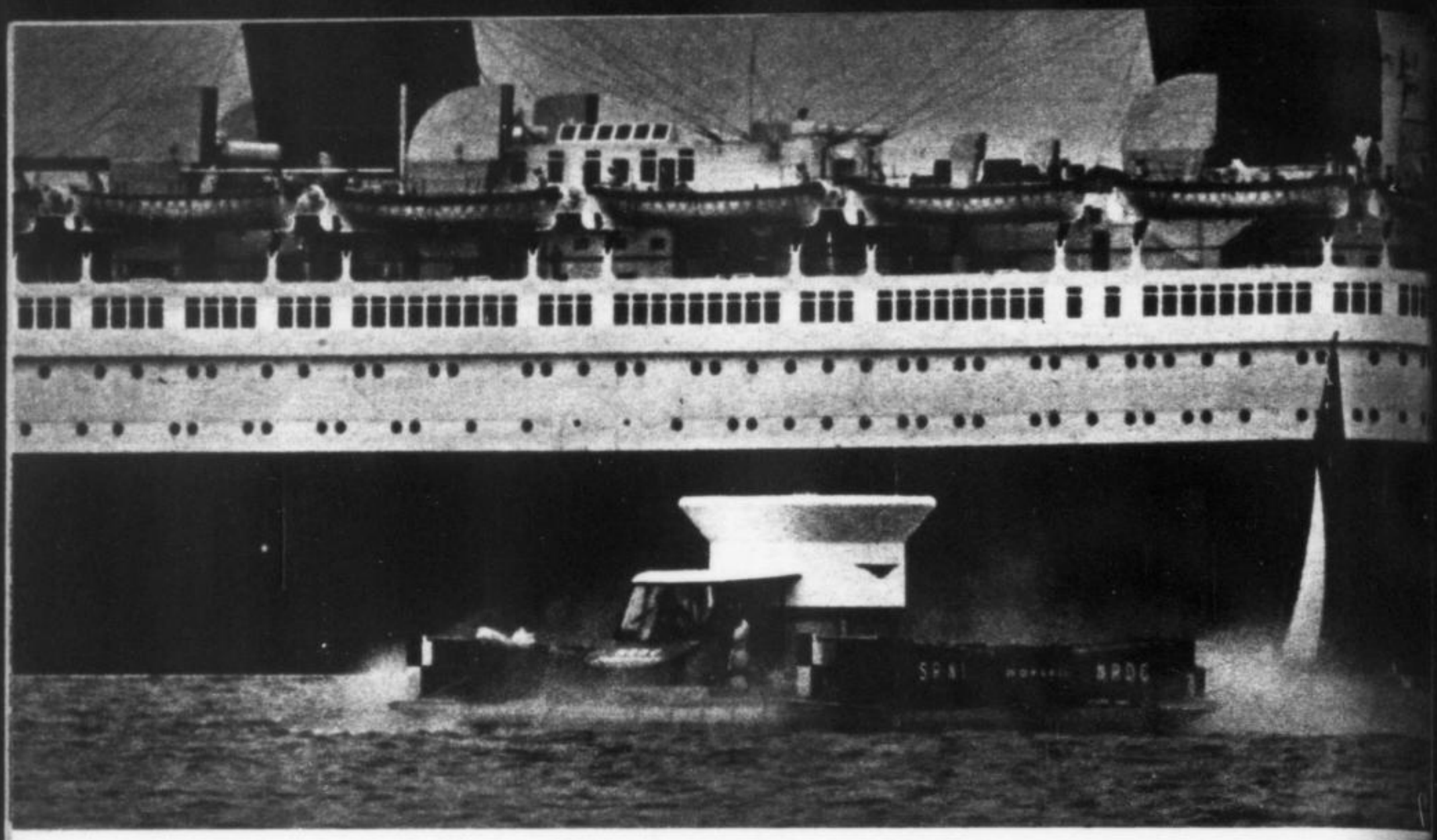
As an extension of present boating practice in which heavy power and sailing craft are shipped to distant cruise points on ocean-going freighters, tomorrow's boats can be flown up and down the coastlines in a fraction of the time. Instead of making the long water run

from Maine to Florida, or Seattle to Catalina, a privately owned or charter boat can be delivered at any anchorage in a matter of hours.

The same process applies to any heavy load. Manufactured goods, household furniture, rush shipments of all sorts, even perishable fruits and vegetables can be packed in weather-proof or insulated cargo containers and flown expeditiously to their destinations. In modern America, house moving has become a familiar phenomena, especially on the West Coast. Jacking up the usual dwelling and rolling it over the road can be a tedious and expensive procedure. Power and phone lines must be bypassed or cut, streams and railroads detoured and motor traffic interrupted. How much easier it will be to lift one's house straight up out of its surrounding neighbors, airlift it to another community and set it gently down on prepared foundations.

In the construction field, the copter sky-hook fills a long felt need. Even with lofty top extensions and elaborate rigging, there is a limit to the practical length of crane booms. There is also a limit to their lifting capacity, which means that steelwork must be erected in bits and pieces. Handling large subassemblies is obviously more economical and it is here that the copter crane can do the trick—either singly or in multiple hitches. It is not beyond the bounds of possibility to pre-fabricate a whole skyscraper floor in an outlying work yard, then to pick up the unit, complete with [*Continued on page* 163]

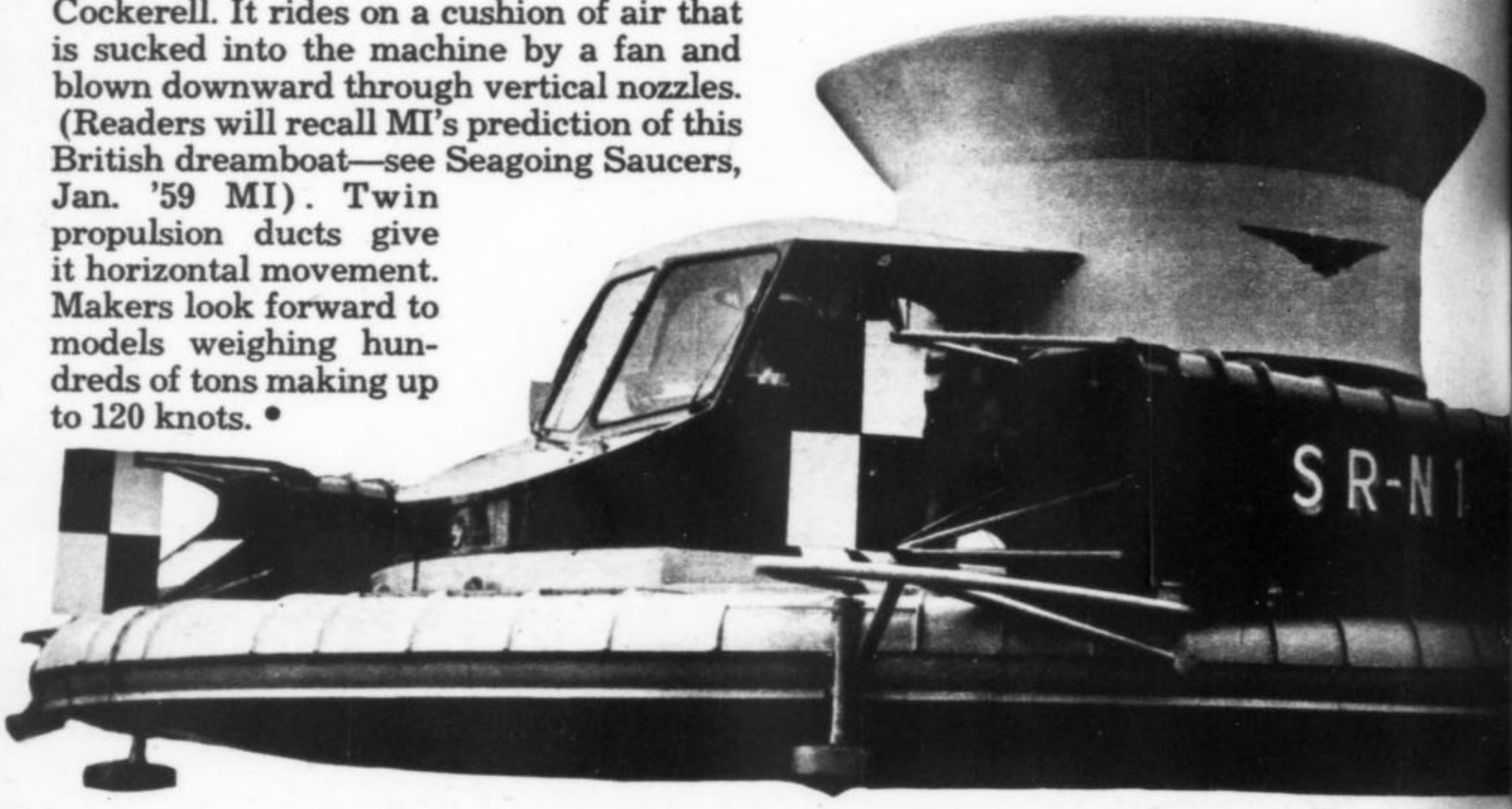
HOUSE MOVING by air-lift could result in homes made in factories, flown to prepared foundations anywhere.



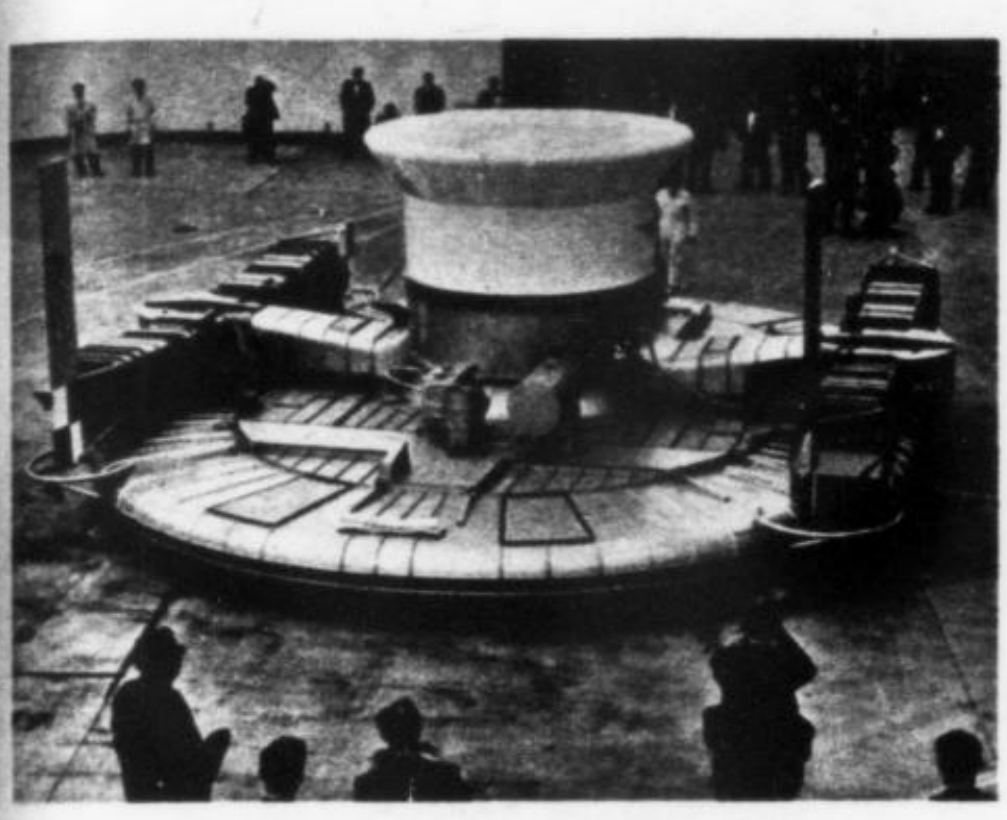
HOVERCRAFT rises next to Queen Mary. Builders envision saucer liners plying trade lines.

This Flying Saucer Really Flies!

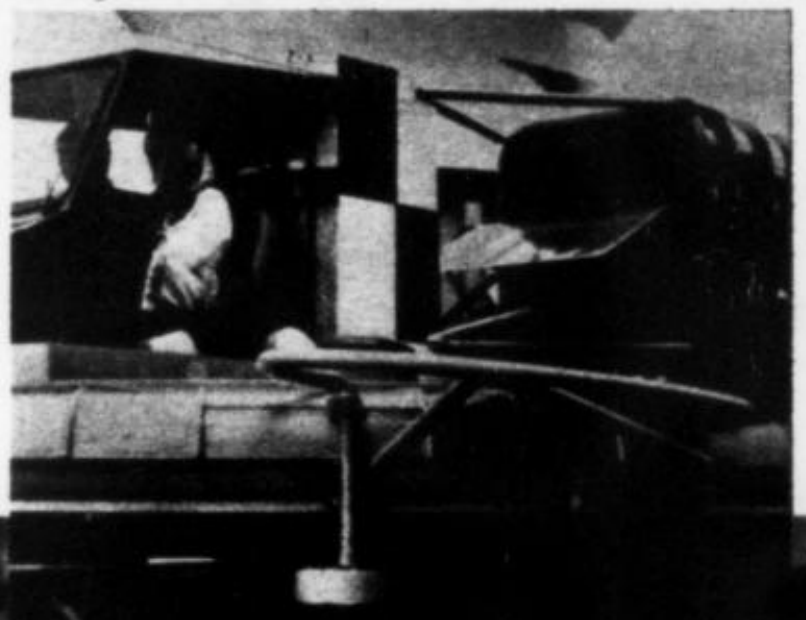
SAUNDERS-ROE, Ltd., British aircraft builders, claims to have ushered in another new era of transportation with the first public showing of their wave-skimming Hovercraft—and they may very well have done it. The Hovercraft is the invention of boat builder C. S. Cockerell. It rides on a cushion of air that is sucked into the machine by a fan and blown downward through vertical nozzles. (Readers will recall MI's prediction of this British dreamboat—see Seagoing Saucers, Jan. '59 MI). Twin propulsion ducts give it horizontal movement. Makers look forward to models weighing hundreds of tons making up to 120 knots. •



SAUNDERS-ROE, LTD., calls it SR-N1. It uses a 450-hp copter engine, weighs four tons.

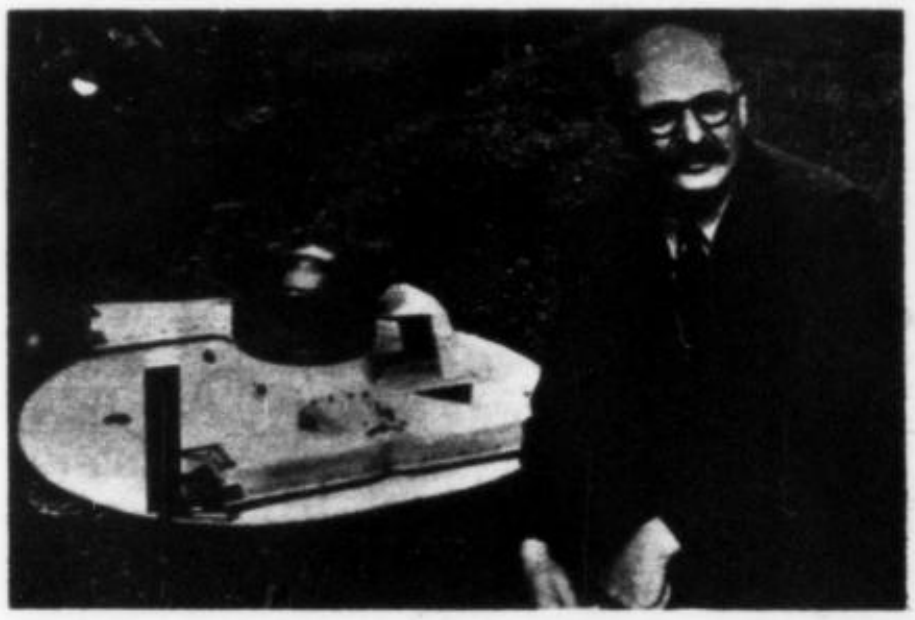


REAR VIEW of the grounded Hovercraft. It can be maneuvered easily atop 15-inch air cushion.



CONTROLS are two sticks, rudder bars. Lower photo: control surfaces for the propulsion ducts.

GO-EVERYWHERE vehicle can travel on trapped air cushion over ice, water, marsh or desert.



INVENTOR C. S. Cockerell, British boat builder, poses with a model of his brainchild.

SPECIAL OUTDOOR FUN ISSUE

Swimming Pools...Newest Games...Grills...Gadgets

MECHANIX ILLUSTRATED

THE HOW-TO-DO MAGAZINE

REFERENCE
2nd FLOOR

Best Buy 25¢ JUNE

ALL ABOUT BEACH BUGGIES

MECHANIX ILLUSTRATED

A FAWCETT PUBLICATION

W. H. FAWCETT, JR. .....president
ROGER FAWCETT .....general manager
GORDON FAWCETT .....secretary-treasurer
ROSCOE K. FAWCETT ..circulation director

DONALD P. HANSON .asst. general manager
GEORGE H. CARL .....production director
RALPH DAIGH .....editorial director

AL ALLARD .....art director
RALPH MATTISON ...associate art director
JAMES B. BOYNTON .director of advertising
JOHN WEBSTER .....advertising manager

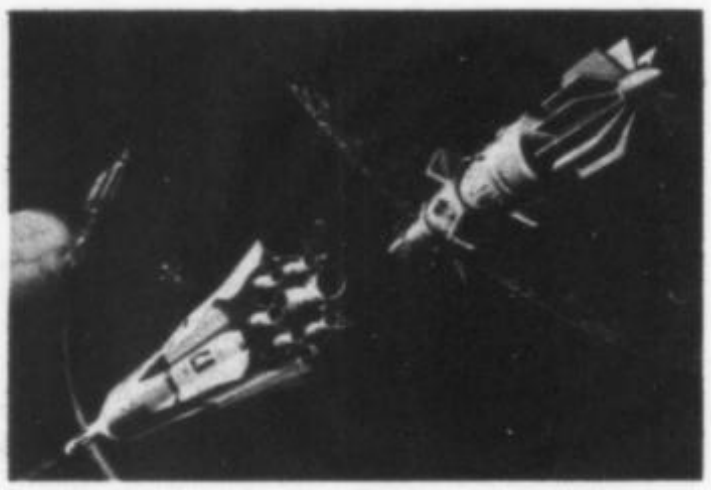
WILLIAM L. PARKER editor

LAWRENCE SANDERS .....feature editor
J. ROBERT CONNOR .....news editor
HARVEY GARDNER .....associate editor
HELEN E. SLOWIN .....production editor

ROBERT G. BEASON .....assistant editor
ROBERT BRIGHTMAN .home and shop editor
JOHN J. SMITH .....associate editor
DICK HOWE .....associate editor

LEONARD ULINE .....art editor
JOSEPH DOYLE .....art associate
VINCENT TROIANO .....art associate

Page 59



Page 68

Page 94

SPECIAL FEATURES

How To String A Tennis Racket 62
Push-Away Wrecker For Outer Space ... 68
Guide To Antique Car Museums 76
Beach Buggies (Cover) 81
Outdoor Fun 95

TOM McCAHILL

Mail For McCahill 37
Tests The New Comet 59
Tests The Buick 88

REGULAR FEATURES

It's New! 65
MIMI 73
MMI: Backyards Into Fairways 80
Outdoors 84
Bright Idea: Electric Lunchbox 85
Inventions Wanted! 92

SHORT FEATURES

Home-Built Windmill 64
Will This Car Break 500 MPH? 72
Submarine On Rails 74
He Owns 300 Cannon 86
Lifesaver Shirt 93
Meet The Queen Bee 94

DEPARTMENTS

Invention Clinic 10
Dear Editor 14

HOME-CRAFTS-SHOP CONTENTS ON PAGE 6

Permission hereby granted to quote from this issue of this magazine on radio or television, provided a total of not more than 1,000 words is quoted and credit is given to the title of this magazine and issue, as well as the statement, copyright 1960, by Fawcett Publications, Inc.

MECHANIX ILLUSTRATED is published monthly by Fawcett Publications, Inc., Fawcett Bldg., Greenwich, Conn.

ADDRESS ALL MAIL: Subscriptions, change of address, Form 3579 to Subscription Dept., Fawcett Bldg., Greenwich, Conn.; and all editorial and advertising to Fawcett Publications, Inc., 67 W. 44th St., New York 36, N. Y.

Second-class postage paid at Greenwich, Conn., and at additional mailing offices.

EDITORIAL OFFICES: 67 W. 44th St., New York 36, N. Y. ADVERTISING OFFICES: 67 W. 44th St., New York 36, N. Y.; 612 N. Michigan Ave., Chicago 11, Ill.; 1532 Guardian Bldg., Detroit 26, Mich.; 2978 Wilshire Blvd., Los Angeles 5, Calif.; 681 Market St., San Francisco 5, Calif.; 123 S. Broad St., Philadelphia 9, Pa.; Hale Printup & Associates, Langford Bldg., Miami 32, Fla. and 1401 Peachtree St., N.E., Atlanta 9, Ga.

Printed in U.S.A. Copyright 1960 by Fawcett Publications, Inc.

Reprinting in whole or in part forbidden except by permission of the Publishers. Address manuscripts to N. Y. editorial office. Unacceptable contributions will be returned if accompanied by sufficient first class postage. Not responsible for lost manuscripts or photos.

SUBSCRIPTION PRICE: 25c a copy. $3.00 a year in U.S., possessions and Canada. All other countries $6.00 a year. Subscription price to members of the armed forces $2.75 per year. Foreign subscriptions and sales should be remitted by International Money Order in U.S. funds payable at Greenwich, Conn.

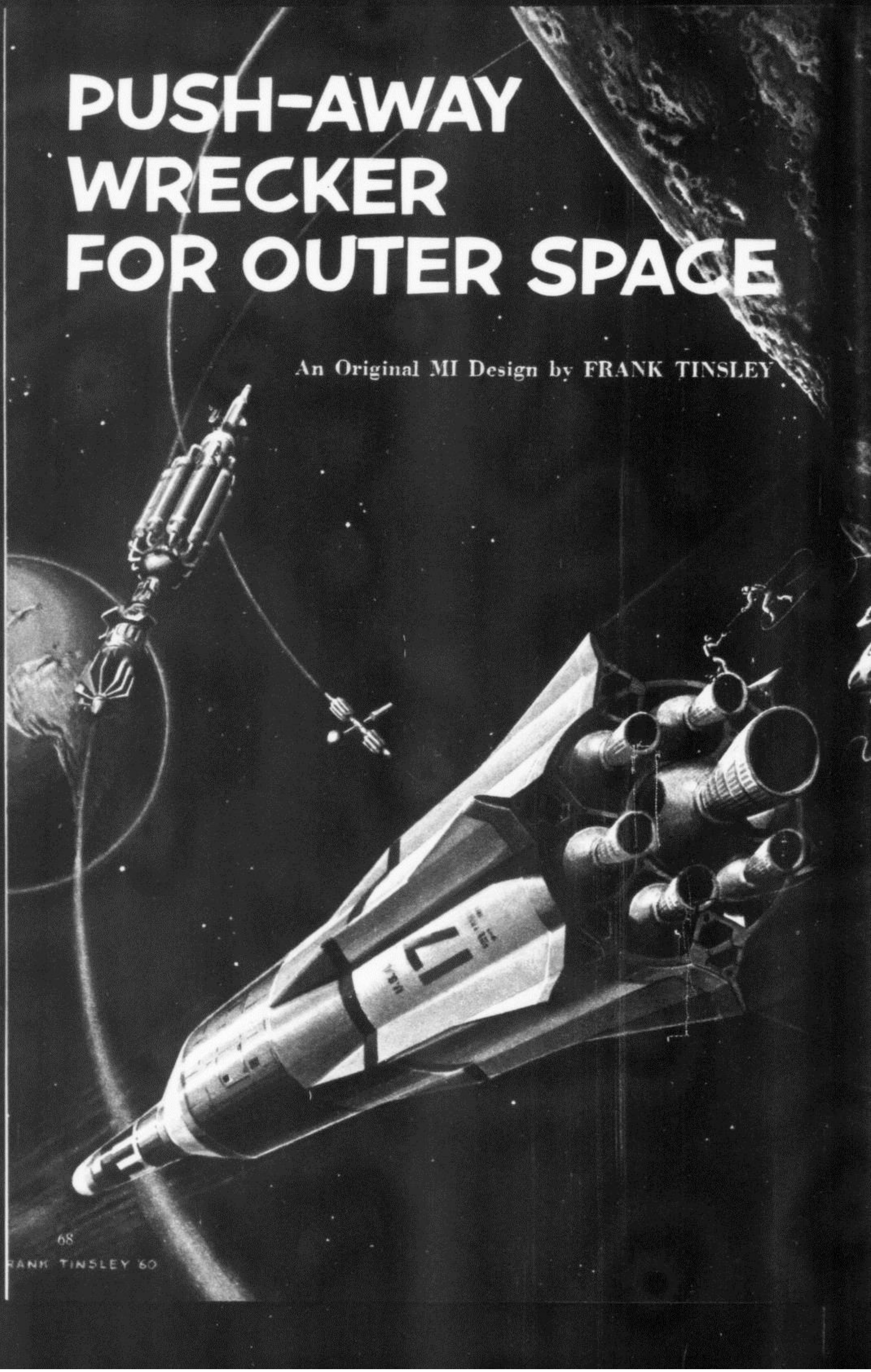
Member of: Audit Bureau of Circulations ABC **Magazine Publishers Association, Inc.** MPA

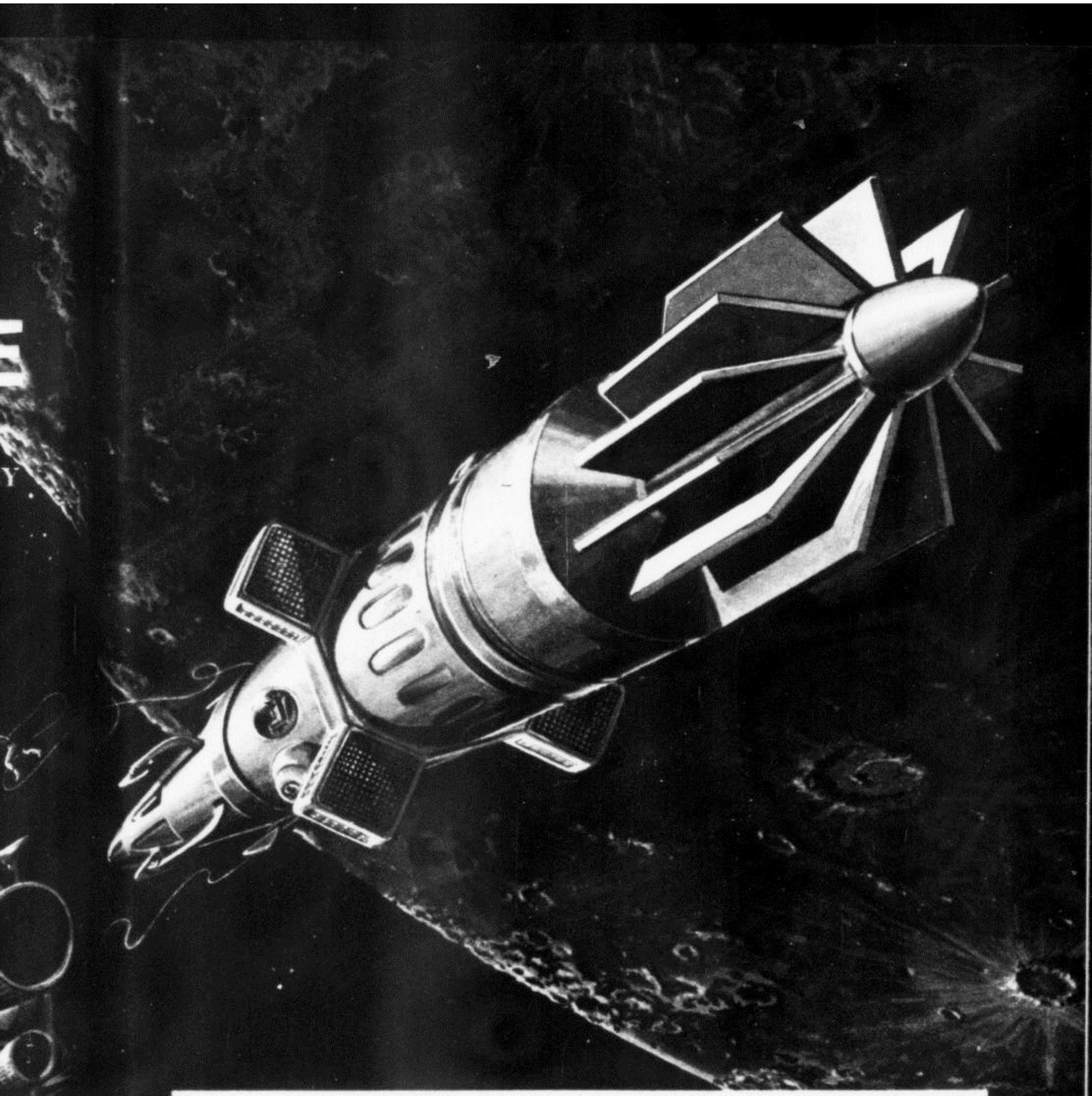
JUNE, 1960

Volume 56, Number 6

PUSH-AWAY WRECKER FOR OUTER SPACE

An Original MI Design by FRANK TINSLEY





SINCE that fateful day in October 1957 when the *beep-beep* of Sputnik I ushered in the space age, more than 25 satellites of assorted sizes and shapes have been shot into orbit. Some of these were short-lived and, after a month or two of cosmic circling, fell back toward earth and were consumed in the atmosphere. The others are still up there, whirling aimlessly in space. Except for three or four U. S. vehicles which still signal back data, they are all dead hunks of machinery, some freighted with expended bat-

TOWBOAT (above) moves into orbit of dead satellite (left) and will lock into its rocket nozzle. Spacemen are shown attaching the tail clamps.

teries and electronic gear, some with the corpses of laboratory animals. If rumor can be believed, there may even be a trio of red-starred space capsules, one bearing the body of an intrepid Russian girl who gambled her life on being the first cosmic explorer—and lost!

During the next ten years, a program of 260 satellite and space probe launchings has been announced by the U. S. There is little doubt that the U.S.S.R. will counter with a similar quota, and other nations now getting into the act will contribute a few more. So it is quite possible that the close of the 1960s will see the Solar System cluttered up with extinct satellites and probes—some five or six hundred of them! To make matters worse, they will be occupying all the best circuits as, at present, we send our "birds" into optimum orbits.

With the pace of space travel steadily accelerating, these dangerous derelicts will have to be disposed of. It will not be an easy job. We can not just blow them up—an exploded satellite will continue in orbit as a cloud of debris, sometimes for a considerable period. The only solution will be to push the unwanted vehicles out of orbit or slow them down until their orbital balance of speed, mass and gravity is upset and they fall toward their host planet. This can only be done by a specialized machine—a sort of cosmic towboat or wrecker for outer space. In this article, MI shows a possible form of such a craft.

Operating exclusively in weightless, frictionless space, our towboat has no need for super-powered rockets. Its extended missions and the enormous distances involved indicate electro-particle propulsion as the most economical drive system. And as this requires a constant supply of electric power, an atomic reactor is the logical source. It is simple, long-lived and compact enough to fit into our tight towboat geometry. We have therefore selected a combination of the atomic reactor to generate heat, the thermionic converter to convert that heat into electric current and ion propulsion to translate the current into thrust.

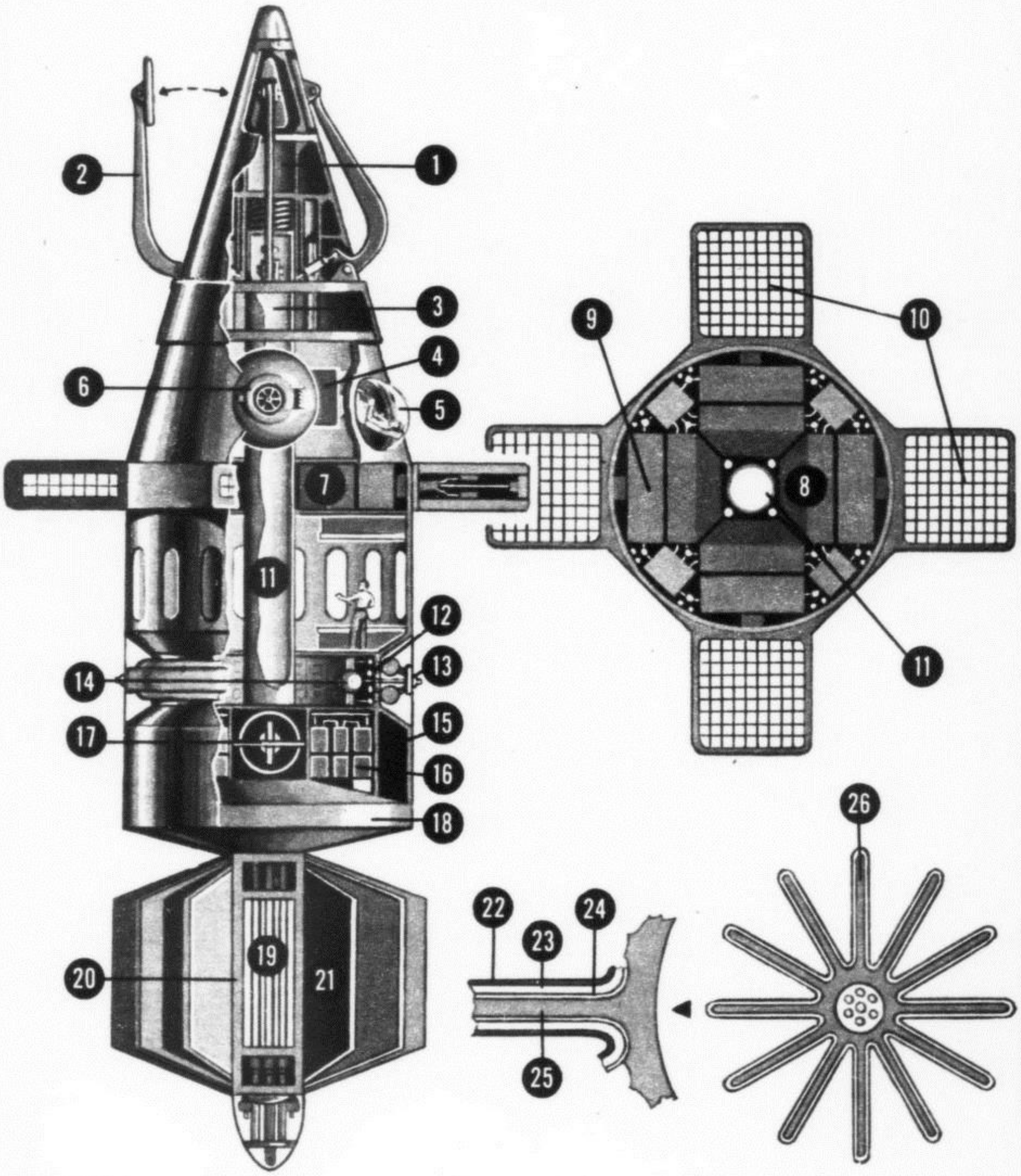
In MI's towboat, the thermionic converter is designed in the form of 12 large fins radiating outward from a central reactor. The latter is jacketed with light shielding which picks up the heat of fission and carries it out through the core of each fin. The hot plates of the battery are mounted on the faces of this core. Cold plates, forming the outer skin of the fins, are exposed to the frigid vacuum of space. The gap between is filled with cesium vapor. Reaction speed, moderated by the customary graphite rods, is controlled by a mechanism in the after end of the pile. This withdraws the rods rearward. At the forward end of the reactor, a heavy circular shield absorbs harmful radiation and envelops the towboat hull and crew in a safe "radiation shadow."

Alternating current, generated by the thermionic converter, passes around the shield and into banks of storage batteries. From these, it is fed to the propulsion system and auxiliary appliances. Among the latter is a gyro stabilizer which controls the craft's attitudes in flight.

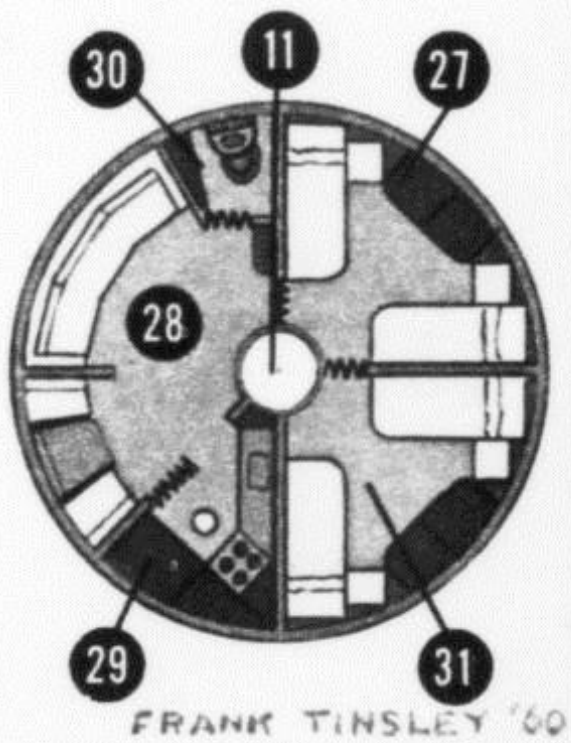
Ion propulsion engines, proposed some years ago by the French physicists, Drs. Irene and Eugen Saenger, are currently under development in several U. S. research labs. While their thrust potentials will be tiny by chemical rocket standards, they are ample in frictionless space and, unlike today's short lived rockets, will be continuous over the entire trip. It has been estimated that a ten-ton vehicle subjected to a ten-pound thrust for a month's time, will gradually accelerate to 25,000 mph.

During flight, the vehicle will build up its speed to the half-way point, then reverse its engines to brake it for the second half. It will thus arrive at its destination at the same rate at which it started. In the case of our towboat, this can be preselected to match the orbital speed of the satellite it intends to pick up. The towboat's four ion engines have a forward propulsion area of 400 square feet, an equal area for reverse and smaller top and side areas for maneuvering.

In pick-up operations, the towboat moves into orbit behind its target, slowly closing the gap between them. When within [*Continued on page* 166]



TOWBOAT DIAGRAM shows: 1. the nozzle contact cone; 2. friction clamps; 3. shock absorber ring and tube; 4. computer; 5. pilot bubble; 6. hatch; 7. propulsion section including (8) guidance gear, (9) ion converters, (10) ion cells and (11) central access tube. 12. Hydroponic garden tubes; 13. algae drying tubes; 14. food collection flasks; 15. Water tanks; 16. storage batteries; 17. attitude control gyro; 18. radiation shield casting radiation-free shadow; 19. atomic core; 20. transfer shielding; 21. thermionic converters. Section of fin shows (22) cold plate, (23) cesium vapor, (24) hot plate, (25) heat transfer from shielding. 26. Cross-section of fin; 27. living quarters; 28. lounge; 29. galley; 30. lavatory; and 31. sleeping cabins.



FRANK TINSLEY '60

Electronic
BATTLEFIELD SCOUTS

By Frank Tinsley

ANOTHER duty of the soldier is being taken over by the machine. The screen of far-flung reconnaissance patrols, upon which military commanders have traditionally relied for intelligence of enemy movements, is being replaced by electronic scouts. Radar detects and pinpoints hostile movements through smoke, fog and dark of night. Mobile TV eyes provide the distant commander with a continuously moving picture of the battle as it develops at various points. Infrared snooperscopes can even sense an enemy by vehicle or body heat!

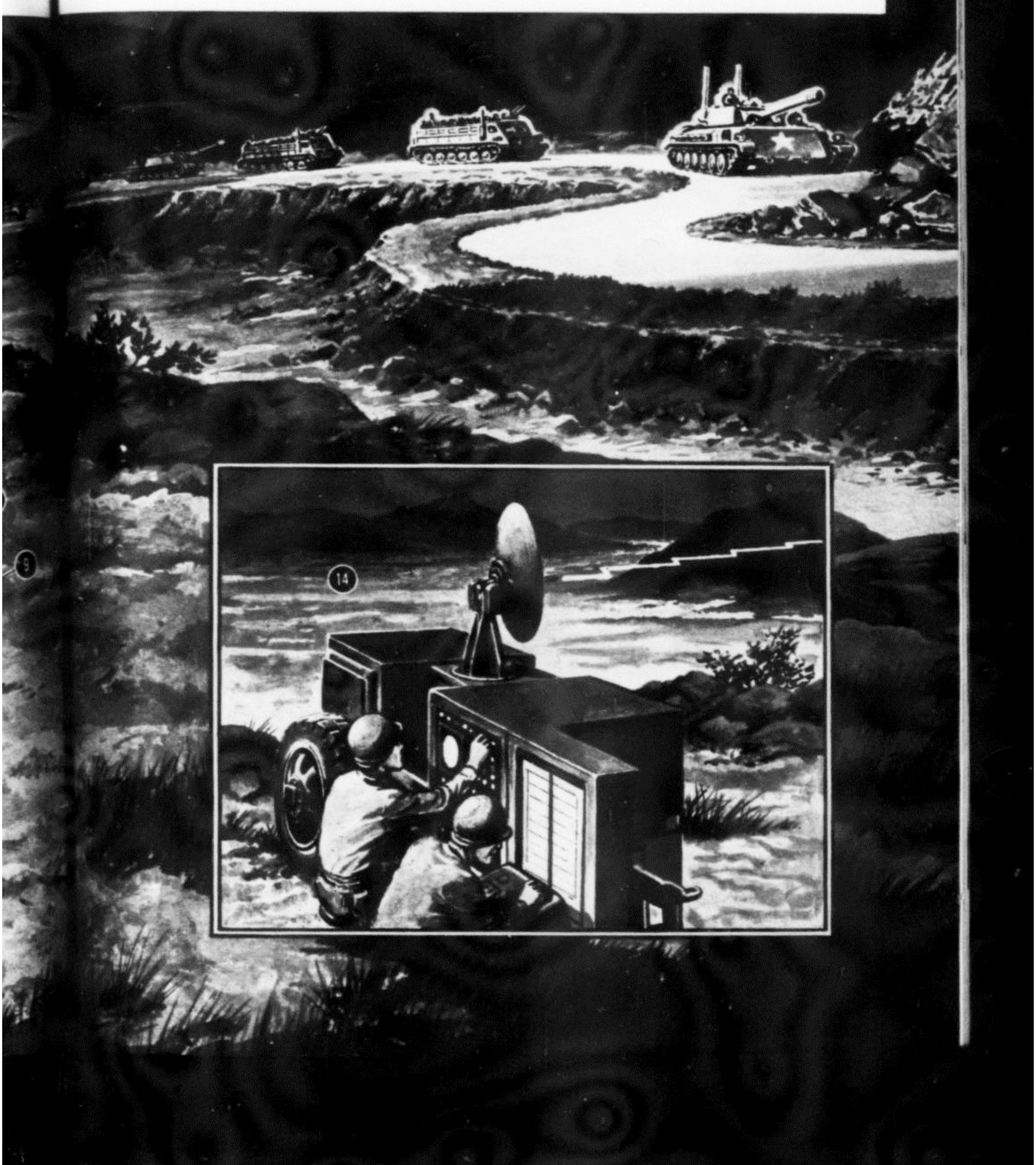
Soon, even the men now required to transport and operate these fantastic scouting gadgets will find their jobs gone. Already flying are robot planes in which the pilot has been replaced by remote control gear operated from a black box miles away. One of these, shown in

ROBOT surveillance drone in action over a battlefield. In background, transport and drone copter are landing Silent Scouts (see next pages).

NIGHT VIEW shows enemy column under surveillance by an MI Silent Scout. Numbers show: 1. TV transmission antenna. 2. Infrared beam projector. 3. Full-circle infrared scanning eyes. 4. TV pick-up and transmitter. 5. Optical range finder. 6. Infrared snooperscope. 7. Sten guns aimed by remote control. 8. Steering motor. 9. Steerable front Terra-tire. 10. Fuel cell powerpack, one on each side of Silent Scout. 11. Remote control propulsion gear. 12. Inertial gyro compass. 13. Rear Terra-tires. 14. (on facing page) Control station for Silent Scout. Observations from several Scouts are correlated here and moving target is pin-pointed on illuminated electronic map. On a repeater map at nearby missile battery, the target's speed, direction and range are automatically computed, waiting missiles are programmed and roar into action. Silent Scout can be made of off-the-shelf components and in a variety of sizes to perform special tasks.

the lead illustration, is the Fairchild AN/USD-5, now under test. Powered by turbojet engines, these unmanned drones can follow land contours at low levels to fool enemy radar, or climb to high altitudes for top deck missions. As they flash over the battlefield, their high speed makes them an almost impossible target for ground gunners. These aerial scouts can carry a variety of observation gear—radar, infrared or photographic cameras—and radio back their pictures in a continuous stream. Thus, if the machine is shot down at any point during its flight, all previously recorded information is safely in the hands of its operators—and no pilots are lost.

The tactics of tomorrow's wars will change [*Continued on page* 160]



et Section: MAKE YOUR OLD HOUSE A NEW HOUSE

MECHANIX ILLUSTRATED

THE HOW-TO-DO MAGAZINE

Buy
5c
OBER

THE PUBLIC LIBRARY
SEP 21 1...
ANN ARBOR, MICH.

Here It Is—

FORD'S NEW SMALL CAR!

MICHIGAN
AV 5809

N TO FIND IDEAS FOR IONS

PUBLIC LIBRARY
FIFTH AVE AT WILLIAM
ANN ARBOR MICH

MECHANIX ILLUSTRATED

A FAWCETT PUBLICATION

W. H. FAWCETT, JR. president
GORDON FAWCETT secretary-treasurer
GEORGE H. CARL production director

ROGER FAWCETT general manager
RALPH DAIGH editorial director
AL ALLARD art director

ROSCOE K. FAWCETT circulation director
JAMES B. BOYNTON director of advertising
RALPH MATTISON associate art director

WILLIAM L. PARKER editor

ROBERT G. BEASON assistant editor

LAWRENCE SANDERS.....feature editor
J. ROBERT CONNOR.....news editor
HARVEY GARDNER.....associate editor
HELEN E. SLOWIN.....production editor

ROBERT BRIGHTMAN home and shop editor
JOHN J. SMITH.....associate editor
DICK HOWE.....associate editor

JOHN WEBSTER advertising manager

LEONARD ULINE .....art editor
JOSEPH DOYLE .....art associate
VINCENT TROIANO .....art assistant
ED BRANDON .....art assistant

SPECIAL FEATURES

Electric Cars Are News Again! ..... *J. Robert Connor* 66
Picture-Card Collecting Is Back! ..... *Harvey Gardner* 72
How To Find Money In Your Home ..... *Lester David* 75
Galaxy Of Three-Pointed Stars 80
America's Zig-Zag Missile ..... *Frank Tinsley* 86

TOM McCAHILL

Mail For McCahill 49
Tests The Ford Falcon 61
Tests The Vespa 400 90

REGULAR FEATURES

Hunting And Fishing: Bow-And-Arrow Hunting ..... *Wynn Davis* 70
Now See This! 71, 88, 97
MMI: Has Gun, Will Profit ..... *John Fetterman* 78
MIMI 79
It's New! 82
Inventions Wanted! 89
Bright Idea: Twinfone 96

SHORT FEATURES

New Imports For 1960 65
Gold-Plated Bathrooms 74
Meter Predicts Your Moods 93
House Of The Seven Trees 94

DEPARTMENTS

Dear Editor 18
Speaking of Jobs: Model Whittler 20
Science Shorties 27
Invention Clinic 28
Patents Granted 34

HOME-CRAFTS-SHOP CONTENTS ON PAGE 8

OCTOBER, 1959

VOLUME 55, NO. 10

Permission hereby granted to quote from this issue of this magazine on radio or television, provided a total of not more than 1,000 words is quoted and credit is given to the title of this magazine and issue, as well as the statement, copyright 1959, by Fawcett Publications, Inc.

MECHANIX ILLUSTRATED is published monthly by Fawcett Publications, Inc., Fawcett Bldg., Greenwich, Conn.

ADDRESS ALL MAIL: Subscriptions, change of address, Form 3579 to Circulation Dept., Fawcett Bldg., Greenwich, Conn.; and all editorial and advertising to Fawcett Publications, Inc., 67 W. 44th St., New York 36, N. Y.

Second-class postage paid at Greenwich, Conn., and at additional mailing offices.

EDITORIAL OFFICES: 67 W. 44th St., New York 36, N. Y. ADVERTISING OFFICES: 67 W. 44th St., New York 36, N. Y.; 612 N. Michigan Ave., Chicago 11, Ill.; 1659 Guardian Bldg., Detroit 26, Mich.; 2978 Wilshire Blvd., Los Angeles 5, Calif.; 681 Market St., San Francisco 5, Calif.; 123 S. Broad St., Philadelphia 9, Pa.; Hale Printup & Associates, Langford Bldg., Miami 32, Fla. and 4087 Haverhill Dr., N.W., Atlanta, Ga.

Printed in U.S.A. Copyright 1959 by Fawcett Publications, Inc.

Reprinting in whole or in part forbidden except by permission of the Publishers. Address manuscripts to N. Y. editorial office. Unacceptable contributions will be returned if accompanied by sufficient first class postage. Not responsible for lost manuscripts or photos.

SUBSCRIPTION PRICE: 25c a copy. $3.00 a year in U.S., possessions and Canada. All other countries $6.00 a year. Subscription price to members of the armed forces $2.75 per year. Foreign subscriptions and sales should be remitted by International Money Order in U.S. funds payable at Greenwich, Conn.

MEMBER AUDIT BUREAU OF CIRCULATIONS

America's Big-Bag MISSILE

86

FRANK TINSLEY '59

By Frank Tinsley

SWIFT and low, the nuclear warhead missile darts above the enemy countryside in an erratic zig-zag pattern designed to elude defensive radar and rockets before annihilating its target. This projected missile promises to give Uncle Sam the knockout punch that would make enemy brass think twice before launching any attack. Authorities believe the low-flying, atomic-ramjet, zig-zag missile may be *the* vital key in maintaining peace.

[*Continued on page* 168]

ZIG-ZAGGING missiles would elude enemy defense system and destroy target.

RE[illegible]
2nd FLOOR

MECHANIX ILLUSTRATED©

15c

AUGUST

Funny-cycles
a new fad

WE DRIVE AND TEST
THE NEW TUCKER CAR

BUILD A 15-FOOT OUTBOARD SKIFF PAGE 120

volume 39 number 10

mechanix illustrated

august 1948

Title Registered U.S. Patent Office

Cover: Globe photo of Pat Northrup, Warner Brothers starlet appearing in One Sunday Afternoon.

A Fawcett Publication

Copyright 1948 by Fawcett Publications, Inc.

special features

How It Feels To Drown 57
By Roger Burroughs

Funny-Cycles—New Fad 60

Beast Under Your Skin 62
By Donald G. Cooley

Rail "Canal" Across Mexico 66

I "Shoot" Wild Animals At Night 68
By Bob Ford

Birth And Death Of A Hot Dog 72

Can Moon-Power Increase Crops? 74
By K. R. Batten

New For The Home 78

This Month's Prize Gadget 79

We Drive And Test The New Tucker Car . 80
By Tom McCahill

MI Tests The 3-Wheel Davis 84

New For The Sportsman 86

Hobby Hall Of Fame—Fibber McGee ... 89

Money-Making Idea—A Pig Brought Home My Bacon 90

Our New Giant Flattop Will Launch Atom Bombers 92
By Jerry Greene

Cow Coats—More Milk 97

New For The Shop 100

New In Science 83, 88, 98, 99

Editor's Workbench 12

Invention Clinic 20

(Continued on page 6)

W. H. FAWCETT, Jr. . . . . President
ROGER FAWCETT . . . General Manager
RALPH DAIGH . . . . . Editorial Director

WILLIAM L. PARKER . . Executive Editor

FEATURE STAFF

GILBERT PAUST . . . . . Feature Editor
FRED HORSLEY . . . . . Science Editor
ARTHUR UNGER . . . . . News Editor

CRAFTS & HOBBIES STAFF

LARRY EISINGER . Crafts & Hobbies Editor
ROBERT BRIGHTMAN . Photography Editor
JOHN KINGDON . . . . . Boating Editor

ART STAFF

FRANK A. TAGGART . . . . . Art Editor
HAROLD E. KELLY . . . . . Art Associate
CLYDE L. BAIRD . . . . . Art Associate

JO O'GRADY . . In Charge of Production

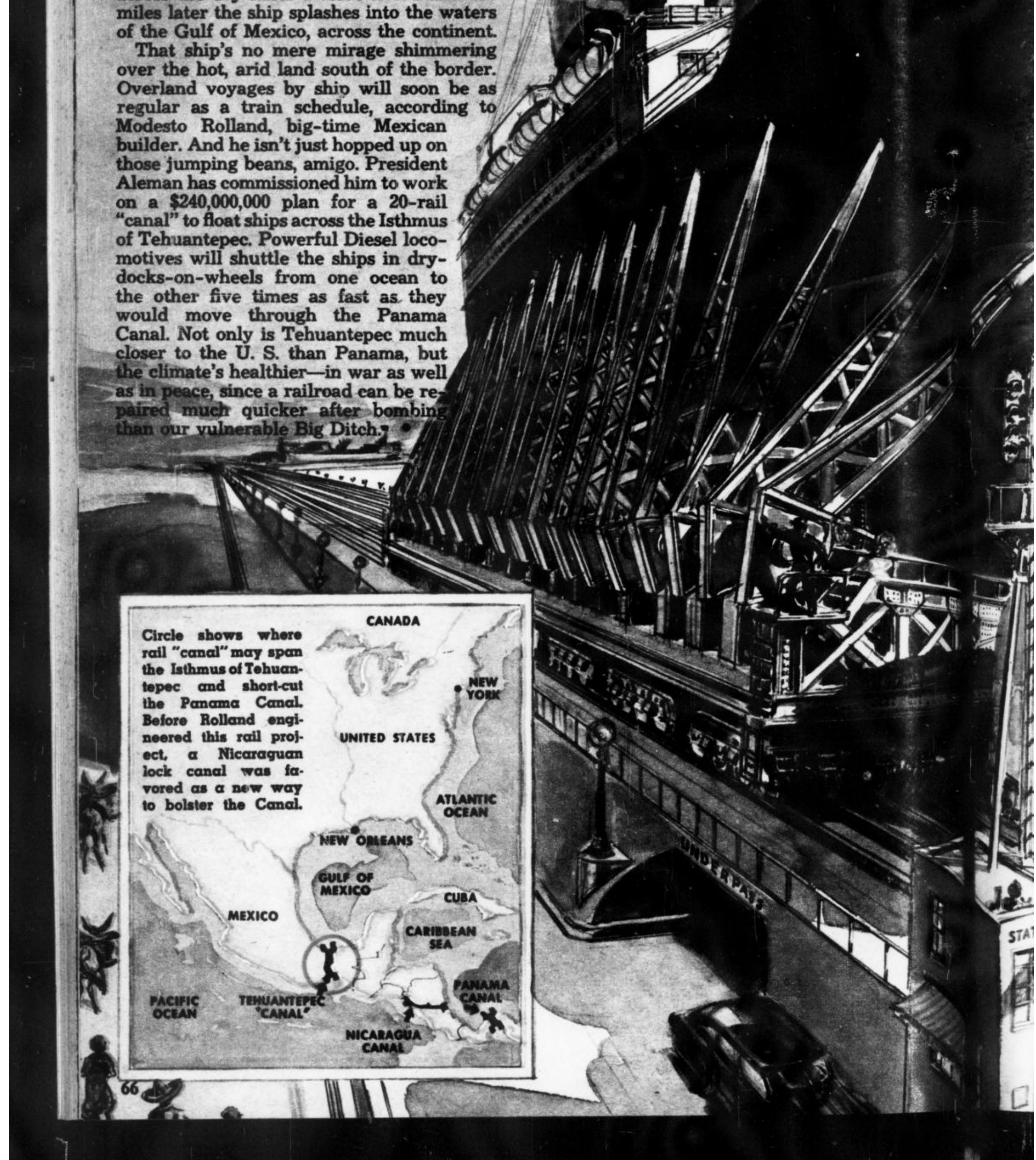
MECHANIX ILLUSTRATED is published monthly by Fawcett Publications, Inc., Fawcett Building, Fawcett Place, Greenwich, Conn. Printed in U.S.A. Advertising and Editorial Offices, 67 West 44th St., New York 18, N. Y. West Coast Representatives: Los Angeles, H. P. Houston, Edward S. Townsend Co., 645 S. Flower St.; San Francisco, Edward S. Townsend, Edward S. Townsend Co., Russ Building. General Offices, Fawcett Building, Fawcett Place, Greenwich, Conn. Eliott D. Odell, Advertising Director; Roscoe K. Fawcett, Circulation Director; Allen E. Norman, Secretary; Gordon Fawcett, Treasurer; Al Allard, Art Director. Entered as second-class matter at the post office at Greenwich, Conn., under the act of March 3, 1879. Additional entry at Louisville, Ky. Copyright 1948 by Fawcett Publications, Inc. Reprinting in whole or in part forbidden except by permission of the publishers. Title registered in the U. S. Patent Office. Address manuscripts to MECHANIX ILLUSTRATED, 67 West 44th St., New York 18, N. Y. All remittances and correspondence concerning subscriptions as well as notification of change of address should be addressed to Circulation Department, Fawcett Building, Fawcett Place, Greenwich, Conn. Not responsible for lost manuscripts or photos. Unacceptable contributions will be returned, if accompanied by sufficient first class postage. Price 15c per copy. Subscription price $1.80 per year in Canada, the United States and possessions. Foreign subscriptions $2.50 per year. Foreign subscriptions and sales should be remitted by International Money Order in United States funds, payable at Greenwich, Conn. Advertising forms close fifth of second month preceding date of issue.

MEMBER AUDIT BUREAU OF CIRCULATIONS

Rail 'Canal' Across Mexico

THE ocean liner slips into a strange dock on the Pacific coast of Mexico. Slowly the ship looms up out of the water, then sails across the dry land. Twelve hours and 156 miles later the ship splashes into the waters of the Gulf of Mexico, across the continent.

That ship's no mere mirage shimmering over the hot, arid land south of the border. Overland voyages by ship will soon be as regular as a train schedule, according to Modesto Rolland, big-time Mexican builder. And he isn't just hopped up on those jumping beans, amigo. President Aleman has commissioned him to work on a $240,000,000 plan for a 20-rail "canal" to float ships across the Isthmus of Tehuantepec. Powerful Diesel locomotives will shuttle the ships in dry-docks-on-wheels from one ocean to the other five times as fast as they would move through the Panama Canal. Not only is Tehuantepec much closer to the U. S. than Panama, but the climate's healthier—in war as well as in peace, since a railroad can be repaired much quicker after bombing than our vulnerable Big Ditch. •



Circle shows where rail "canal" may span the Isthmus of Tehuantepec and short-cut the Panama Canal. Before Rolland engineered this rail project, a Nicaraguan lock canal was favored as a new way to bolster the Canal.

Giant Diesel engine and power winches launch the rail-borne ship into the sea again. Ramp locks like this will load or unload vessels on multi-wheeled drydocks for the trip.

Our New Giant Flattop Will Launch Atom Bombers

BY JERRY GREENE

An exclusive story on the Navy's 65,000-ton secret weapon for hit-and-run A-bomb attacks.

YOU can see her now, as she will look about 1952, the great seagoing air base, boiling along easily through storm-pitched waves at 55 knots and jet-launching her task force of atom bombers.

She's the Navy's newest and biggest flattop, an admitted 65,000 tons of fighting ship whose deck is the equivalent of 10,000 feet of hard and dependable runway. Zooming up from her bow in a jet-assisted takeoff is one of her 40 A-bombers, a trifle smaller than the B-29 Superfort but twice as speedy.

Secretary of Defense Forrestal and the nation's top military leaders approved plans for the mammoth 1500-foot carrier at a secret Florida meeting of the Joint Chiefs of Staff. In case of sudden war, the Joint Chiefs of Staff are directed to use her bombers in swift, shattering attacks wherever they can strike within their 2000-mile radius.

Estimates now indicate the finished flattop will carry a $150,000,000 price tag. The Coral Sea, the Midway and the Franklin D. Roosevelt—the big 980-foot, 45,000-ton jobs that are our latest carriers and that now form the backbone of our postwar fleet—cost about $90,000,000 each.

The new queen of our flattops will have a flush deck with no tower or superstructure on the side—a throwback to the old

This closeup of the giant carrier's flight deck before a dawn takeoff shows how MI's artist visions the ship-based A-bomber. Already hooked on the catapult, the bomber is about to get its atom load. Two propeller-jet engines in each wing power the 3-man plane at near-sonic speeds.

Jets can already do the job on carriers. Phantom shows as it plops on Saipan's deck.

Langley in 1922, the first ship we converted for carrier use. All our current carriers pack the communications quarters, the captain's bridge, the radar equipment and multiple gunmounts into the "island," the towered structure you see on the side of the flight deck.

By eliminating the island and by using smokestacks that can fold away to the side, the new carrier will give its big planes a broad, unobstructed runway for takeoffs and landings. The Ranger, our first ship built from scratch as a carrier, used this folding-stack idea but still had an island. On the new carrier, a

control bridge just below the forward edge of the flight deck will take the place of the island. New radar and television devices and scanning periscopes will show the skipper what's going on all over the ship as if he were still perched high above the flight deck in a commanding island.

In addition to at least four catapults slotted in the deck and capable of slinging even the big atom bombers aloft at 10-second intervals, the new ship also will have launching platforms for our modernized version of the Germans' mighty V-2 rockets. The Navy already has successfully fired the V-2 from the reinforced deck of the Midway.

A prime factor in developing the new carrier is the power plant, which must have terrific energy to drive the giant ship through the sea at 55 knots, or some 60 miles per hour. If work on atomic energy has advanced sufficiently by the time the ship is ready for its power plant, an atomic motor may replace the great turbines now planned. The ship will be more than big enough to carry all the lead needed to shield the crew against an atomic engine's deadly radiation.

Despite its colossal size, the flattop queen will be no sitting duck for enemy planes or subs. She'll be far better protected against bombs and torpedoes than our sturdy Midway class of carrier is today. Heavy armor plate will bolster the flight deck's hard-board surface, and the latest wrinkles in blastproof compartments will be incorporated in her bulging double hull. Now the Midway has a lot of guns. Eighteen 5-inch dual-purpose guns in steel tubs guard her against attacks by sea or air—with plenty of closeup support from 21 quadruple mounts of 40-millimeter and 28-millimeter machine guns bristling around her decks. But the new queen will have nearly double this armament—and guided missiles!

Even without such powerful antiaircraft defenses as the queen will pack, an enemy would find it extremely "unprofitable" to toss away precious A-bombs in a futile attempt to bull's-eye the flattop.

DUBUQUE PUBLIC LIBRARY
TECHNOLOGY DEPARTMENT

MECHANIX ILLUSTRATED

A FAWCETT MAGAZINE

MAY
15c

B-17 Ball Turret

HOW HYPNOSIS CURES BATTLE SHOCK

IN FULL COLOR—THE FINE ART OF MODEL RAILROADING

MECHANIX ILLUSTRATED

Title registered U. S. Patent Office

W. H. FAWCETT, JR., President

ROGER FAWCETT, General Manager

Ralph Daigh, Editorial Director — **Bill Williams, Executive Editor**

Editors: Roland Cueva Bernard Wolfe

Associate Editors: Edward Kelly, *Features;* Gilbert Paust, *Aviation;* George Daniels, *Crafts & Science;* Jo McCallion, *Production*

MAY, 1945 — **VOL. XXXIV NO. 1**

On the cover: *Cutaway drawing of Flying Fortress ball turret by Wheelock & Benson*

SPECIAL FEATURES

DO OUR SOLDIERS FEAR HYPNOSIS?—
by R. A. Montherlant 35
An old technique is revived to cure battle neuroses

ROBOT PATHFINDER 38
The Air Position Indicator replaces the sextant

HE PUTS UP A BATTLE—*by Don Romero* 39
Captain De Florez makes flight training as real as battle for our fliers

LOOKING A HURRICANE IN THE EYE—
by Eric Sloane 42
What happens at the heart of a hurricane?

NAVY UNISHOPS—*by John LaCerda* 45
Portable repair units for invasion-damaged craft

PLANES ARE GETTING PERSONAL—*Part II*—
by Roland Cueva 46
Learn how easy it will be to operate your own plane

REFUELING ON THE RUN 50
A carrier refuels a big flying boat at sea

FIGHTING FIRE WITH FIRE—*by John Maguire* 52
Bull-dozers, jeeps, and flame-throwers will lick future forest fires

SCIENCE IN PICTURES ..... *Beginning on* 55

COSTUME JEWELRY—*by Ann Colbert* 67
Frederick Mosell makes a fine art of creating inexpensive adornment

GERMAN JETS—*by Gilbert Paust* 70
Color pictures of the Nazis' jet-propelled fighters

HIGHBALLING THE HALF-PINTS—
by Fred Ripperda 74
Model railroading, described by an expert, illustrated in full color

DEPARTMENTS

YOUR INVENTION CLINIC 12

CHIPS FROM THE EDITOR'S WORKBENCH 14

MONEYMAKERS AND MONEYSAVERS 26
(Classified Ads)

CRAFTS AND HOBBIES

LS MFT 83
A snappy little plywood sailboat

SHOP SHORTCUTS 89

WOOD 90
Unusual uses of this basic material

GARDEN IDEAS 94

POCKET MAGNIFIER 96

SKATE WHEEL TRAILER TRUCK 98
A model for the kiddies

MODEL JET PLANE CONTEST 99

FOLDING TEA TRAY 100

THE SCHOOL SHOP 102
Aviation Lesson No. 26

PLANE QUIZ 105

DRESSING UP OLD DRAINBOARDS 106

REVERSIBLE SWITCH 109
For Split Phase Motors

THE GINGHAM DOG AND CALICO CAT 110

WAVY EDGED WALNUT TRAY 110

UNCONVENTIONAL GRINDING 112

BOATS AND BOATING 114

HOME AIDS 116

USEFUL STUNTS WITH ADHESIVE TAPE 117

IDEAS FOR SERVICE MEN 118

PHOTO KINKS 120

PHOTO CONTEST 121

THE CAMERA LIES 122

KEEP IT ROLLING! 126

SHORTCUTS IN RADIO TROUBLE-SHOOTING 128

Copyright 1945 by Fawcett Publications, Inc.

MECHANIX ILLUSTRATED is published monthly by Fawcett Publications, Inc., 1100 W. Broadway, Louisville 1, Ky. Printed in U. S. A. Advertising Offices, 295 Madison Ave., N. Y. 17, N. Y. Editorial Offices, Paramount Building, 1501 Broadway, New York 18, N. Y. West Coast Representatives: Los Angeles, H. P. Houston, Edward S. Townsend Co., Pacific Mutual Building; San Francisco, Edward S. Townsend, Edward S. Townsend Co., Russ Building. General Offices, Fawcett Building, Greenwich, Conn. Elliott D. Odell, Advertising Director; Roscoe K. Fawcett, Circulation Director; Allen E. Norman, Secretary; Gordon Fawcett, Treasurer; Al Allard, Art Director. Entered as second-class matter at the post office at Louisville, Ky., under the act of March 3, 1879. Additional entry at Greenwich, Conn. Copyright 1941 by Fawcett Publications, Inc. Reprinting in whole or in part forbidden except by permission of the publishers. Title registered in the U. S. Patent Office. Address manuscripts to New York Editorial Offices. All remittances and correspondence concerning subscriptions as well as notification of change of address should be addressed to Circulation Department, 22 West Putnam Avenue, Greenwich, Conn. Not responsible for lost manuscripts or photos. Unacceptable contributions will be returned, if accompanied by sufficient first class postage. Price 15c per copy. Subscription price $1.80 per year in U. S. and possessions. Canadian and foreign subscriptions $2.30 per year. Foreign subscriptions and sales should be remitted by International Money Order in United States funds, payable at Greenwich, Conn. Advertising forms close fifth of second month preceding date of issue.

MEMBER AUDIT BUREAU OF CIRCULATIONS

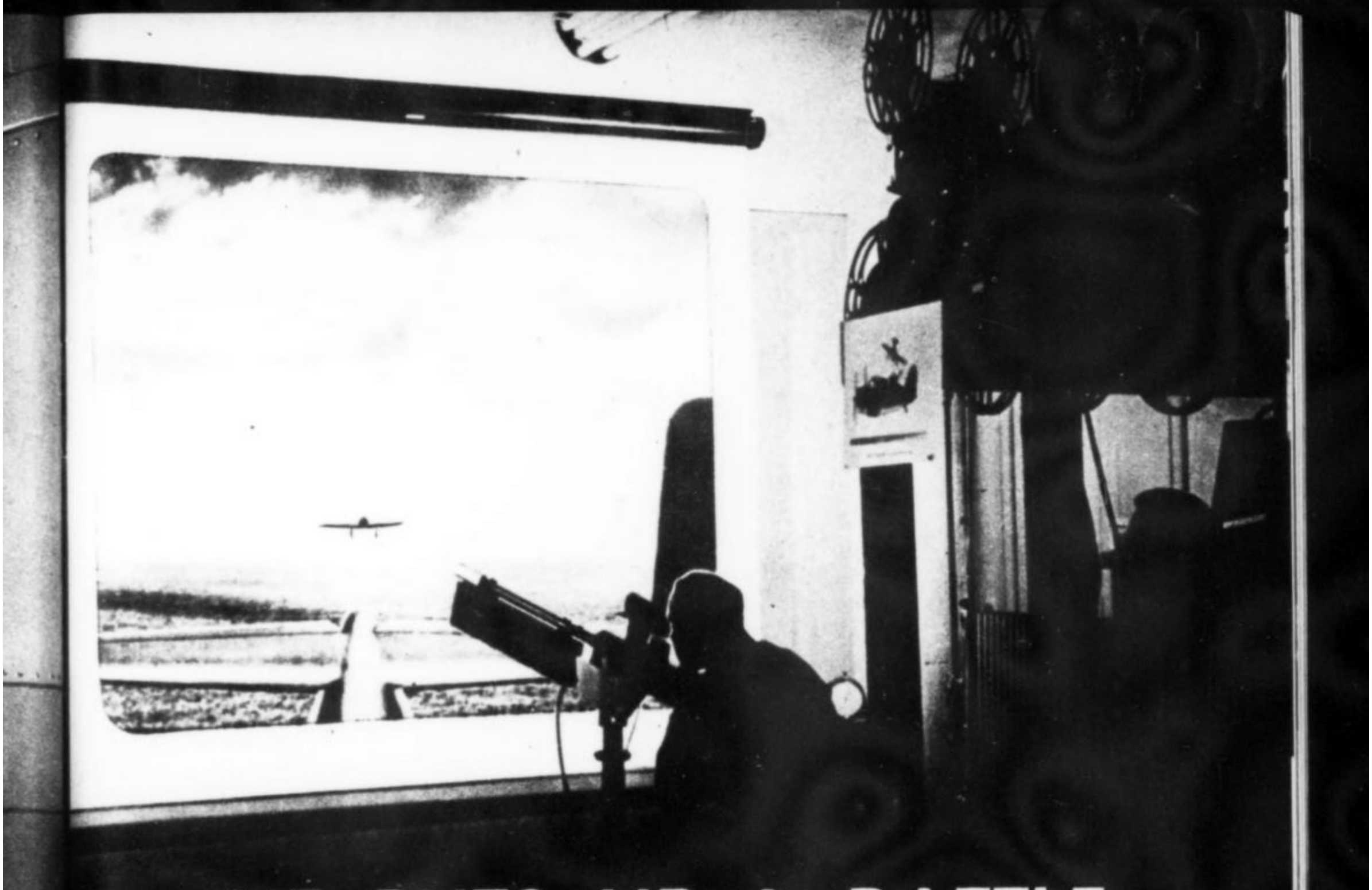
ROBOT PATHFINDER

Replacing sextant and compass, aviation's API solves tough navigation problems quickly.

ONE of the great technical achievements of the war has just been revealed by the armed services. It is an almost magical device called the "Air Position Indicator" which gives the pilot and navigator of a bomber continuous, automatic position readings in terms of longitude and latitude.

Though the device has been in use for many months, it has been kept a secret until now because of its importance to the great Superfortress bombing attacks on Japan.

The API is invaluable not only because it tells pilots exactly where they are on the earth's surface in a split-second's time, but also because it saves hours of difficult and taxing work for the navigator of a bomber. who has hitherto had to compute his plane's position laboriously [*Continued on page* 141]



HE PUTS UP A BATTLE

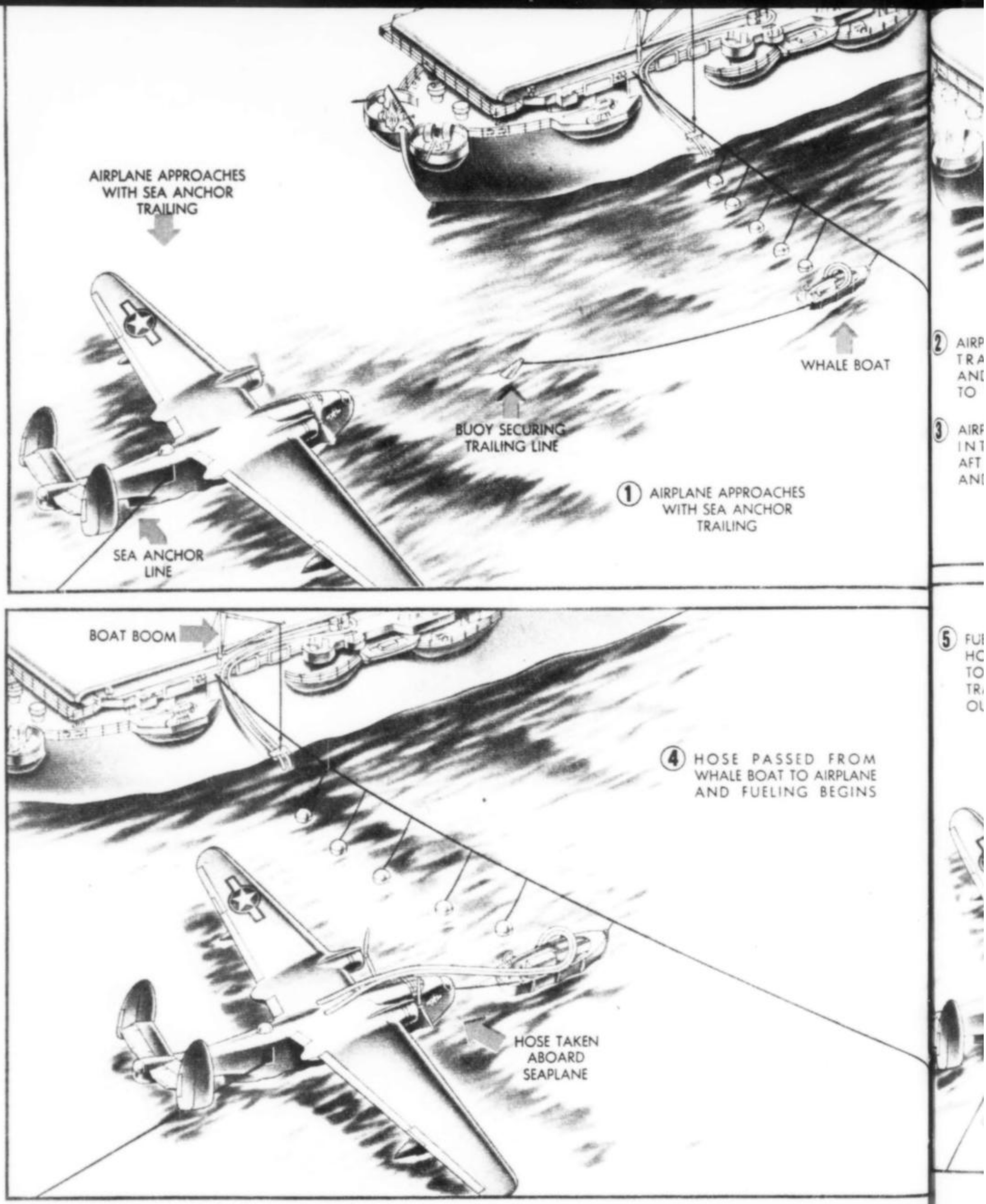
The turret gunner can practice shooting at attacking fighters with the Dual Projector Trainer.

by Don Romero

After learning combat tactics in Captain de Florez's training devices, Navy pilots say shooting down Japs is anticlimax.

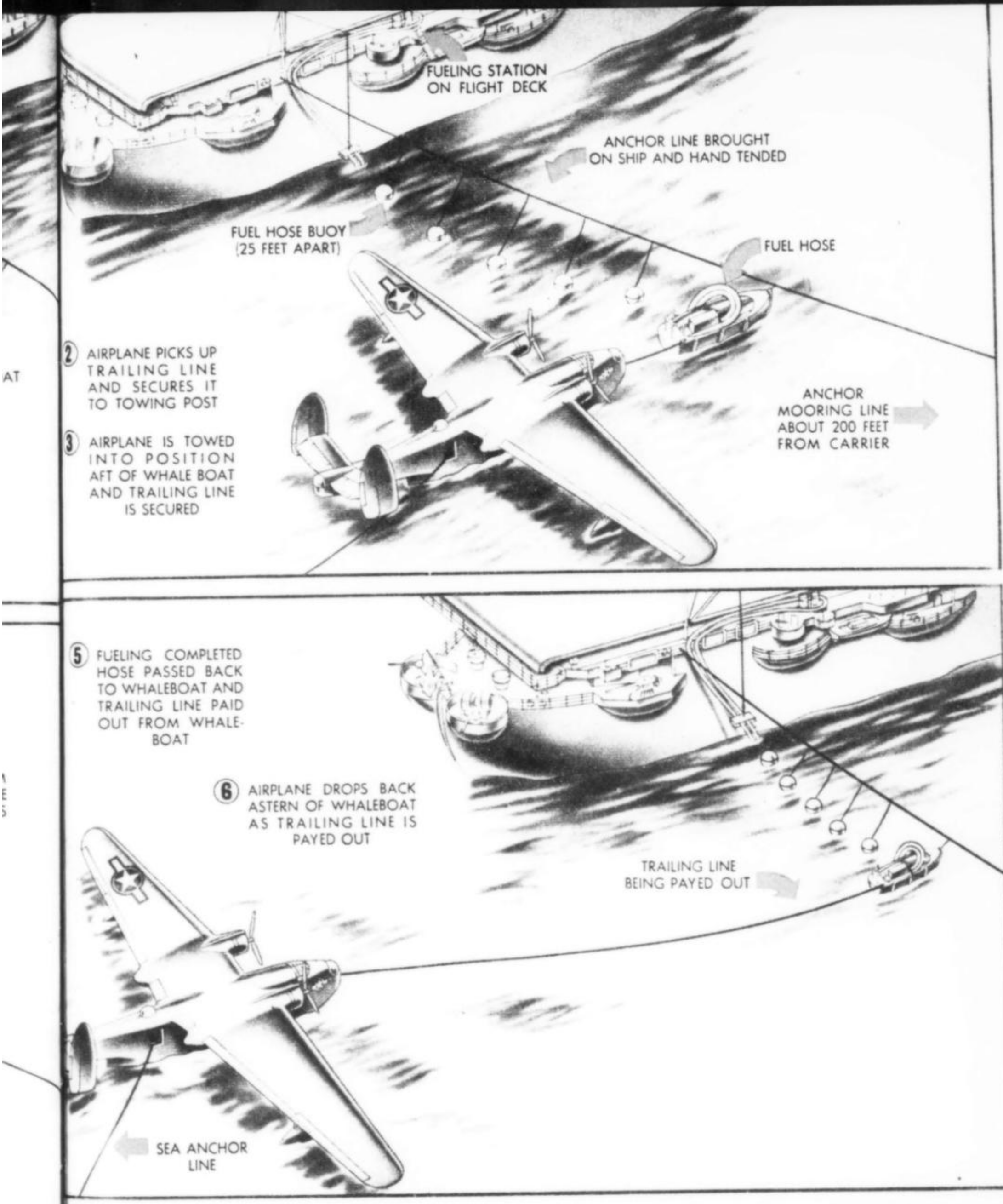
AT 56, short, dynamic, mustachioed Captain Luis de Florez, USNR, has done more to blast the Japanese air force out of the sky than have the Navy's 20 highest scoring aces. By means of aerial-training devices that have been popping out of his inventive mind for the past four years and that have been acclaimed "the greatest military training aids of modern times," the Captain has sent Jap planes plummeting to destruction, has saved Navy flyers from death and injury, and has probably done as much to speed the winning of the war in the Pacific as any other man in the

Irrepressible, untiring Captain Luis de Florez was awarded the Collier trophy for his training devices.



REFUELING ON THE RUN

U. S. CARRIERS and tankers are now serving as mid-ocean "filling stations," handling the tricky business of issuing gasoline to other craft while cruising at submarine-dodging speeds in enemy waters. This refueling technique greatly extends the operating range of the flying



boats and small surface ships which the Navy is using to patrol vast fighting areas in the Pacific. In the four drawings above are shown the main operations in refueling one of the Navy's biggest flying boats—a Martin Mariner.

Informed by radio that the Mariner would like to drop down for a drink, the carrier, without reducing its speed, puts out two whale boats to which has been attached a heavy mooring line. To one of the boats are also attached two fuel hoses. Pulling away on the leeward side, the whale boats [*Continued on page* 150]

by John Maguire

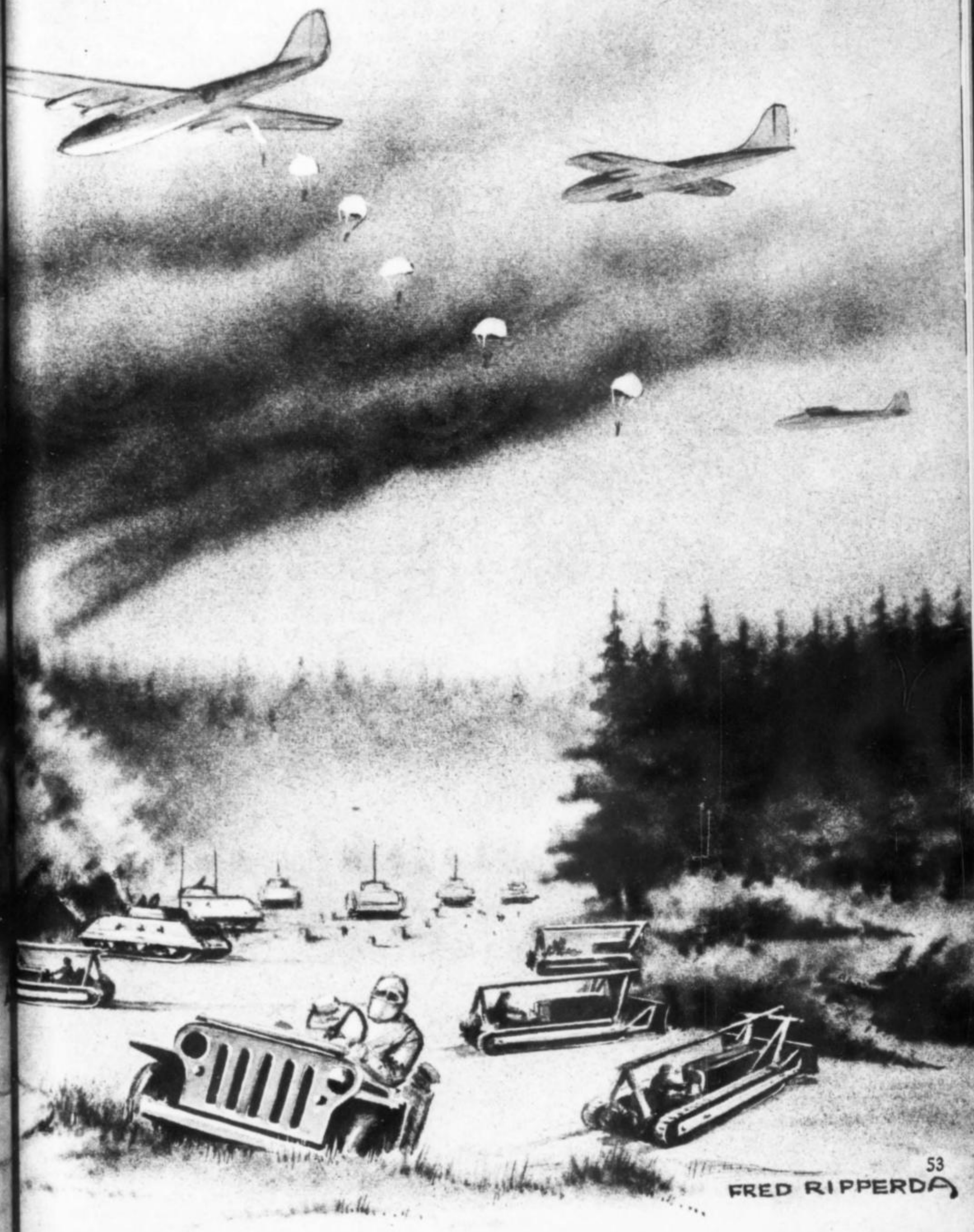
Comes V-Day, a vast array of destructive tools, from flamethrowers to dive bombers, will be hurled into the blitz against forest fires.

THE vast stock of tools of destruction built up by the United States in the past few years will not all be tossed into the discard when peace comes. A tremendous, never-ending peacetime war—the nationwide fight against forest fires—will make immediate inroads on our war-weapon stockpiles.

Sparked by the researches of David P. Godwin of the United States Forest Service, men of the forest industries have been dreaming of V-day since

This drawing visualizes a postwar forest fire, with all the deadly machines of war combatting it. Flamethrowers start back fires, bulldozers dig trenches for firebreaks, a helicopter sprays chemicals, personnel is rushed to the scene by jeep, half-track, transport plane. Overhead medium bombers drop sticks of flame-quenching bombs; crews are directed by walkie-talkie.

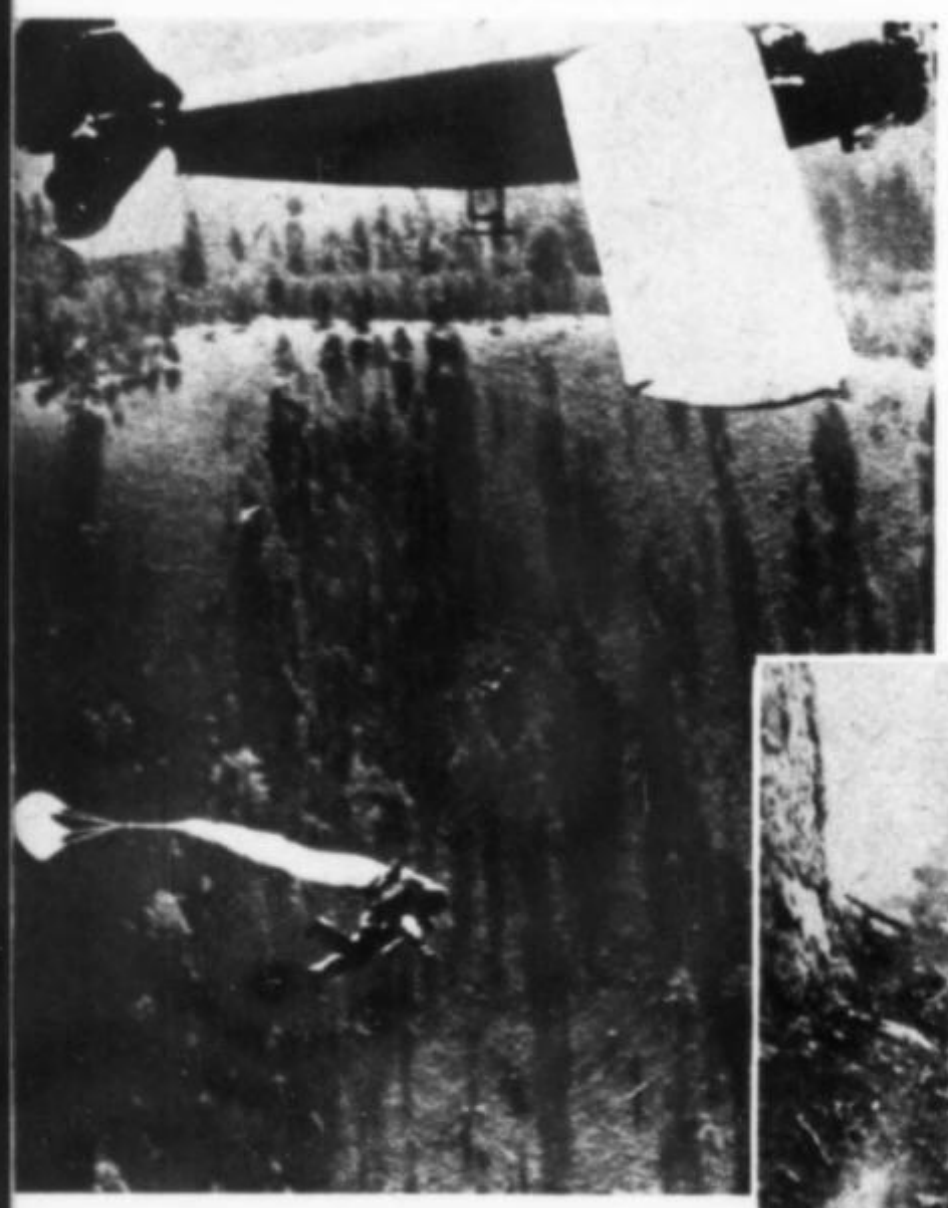
FIGHTING FIRE WITH FIRE



53

FRED RIPPERDA

Sturdy bulldozer clearing a fire lane to stem the spread of a roaring fire threatening a large Northwest forest.



A smoke jumper, carrying fire-extinguishing equipment, sails down over a forest in Montana.

An Oregon logger demonstrating use of flamethrower as device for starting slash fire.

Pearl Harbor. They plan to equip their fire-fighting forces with planes, jeeps, half-tracks. walkie-talkie radio sets and other devices hitherto used chiefly to spread death and misery. Even the deadly flamethrower is slated for an important role in this postwar drama of the woods.

New techniques for getting the jump on fires in their early stages stem largely from lessons learned in the war. The order of attack on a forest fire in postwar days will closely approximate approved military tactics, in addition to utilizing effective military tools.

When a fire tower lookout discovers a "smoke," his telephone radio warning will be received at the nearest fire station. Within ten or fifteen minutes, a plane—or several planes—will soar over the area, peel off, and go into a flaps-down, "dive bombing" attack on the smoking woods.

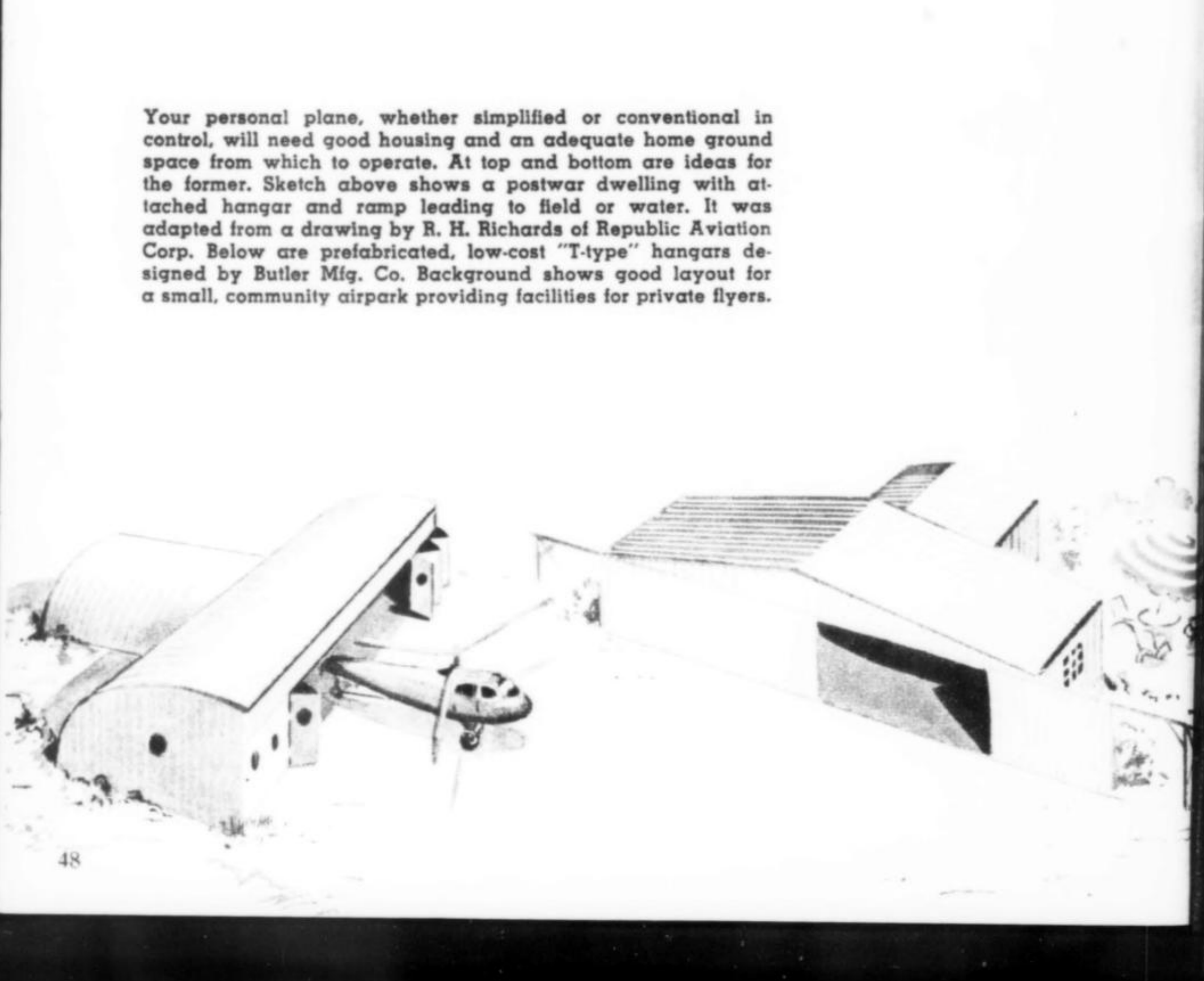
Although dive bombing, with bombs that were nothing more than exploding fire extinguishers, was tried out some years ago, it did not prove too successful. Hitting the vital targets accurately was difficult, at that time.

Now, however, with precision-engineered bombsights due to be a glut on the postwar market, and with thousands of highly skilled pilots and bombardiers home from the wars, results will be much more effective.

If the fire has gained too much headway for the dive bombers, or if conditions of terrain or other factors prevent efficient dive bombing, whole fleets of medium bombers will be called into action in many locations, to literally blanket the area with chemical "fire-out" bombs.

In a succeeding wave will arrive huge transports, carrying squads [*Continued on page* 66]

Your personal plane, whether simplified or conventional in control, will need good housing and an adequate home ground space from which to operate. At top and bottom are ideas for the former. Sketch above shows a postwar dwelling with attached hangar and ramp leading to field or water. It was adapted from a drawing by R. H. Richards of Republic Aviation Corp. Below are prefabricated, low-cost "T-type" hangars designed by Butler Mfg. Co. Background shows good layout for a small, community airpark providing facilities for private flyers.



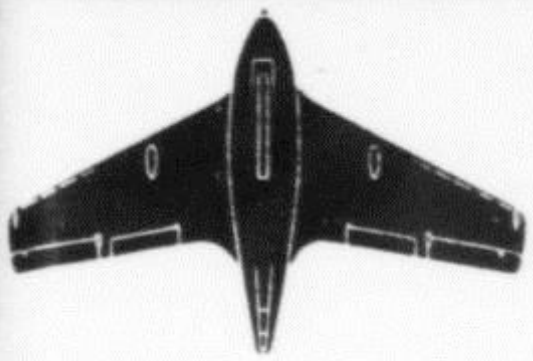
GERMAN JETS

by Gilbert Paust

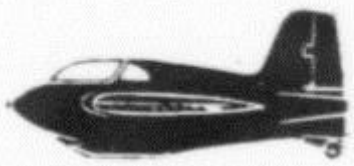
M. I. Aviation Editor

Nazi jet-propelled fighters have been flying since 1942. Our pilots have learned to respect the Me-262, He-280 and rocket fighter Me-163

WHEELOCK & BENSON



Me-163 is world's first rocket fighter. Some models, with warhead in nose, are used for ramming; pilot-ejector device, operated by push button, catapults pilot to safety. Wheels drop after take-off; plane lands on skid.



HIGH in the air over the German Reich a formation of Fortresses is carrying its cargo of explosives to dump upon a vital Allied objective. Still higher above them hovers their protecting escort of fighters.

Suddenly, there appears a streak of flame below them.

It increases in size as it approaches the heavy bombers, and then it flashes through the formation, leaving a thin line of exhaust gases in its wake.

It turns, and heads toward the lead Fortress.

Above, the fighters dive to defend their charges from this new, mysterious menace. The turrets of the Fortress turn toward it and the sky is momentarily lined with the thin trails of tracer shells as it comes within range of the "50s."

Never swerving, it speeds straight for the large plane. There is a heavy explosion as it strikes, and the Fortress, a flaming mass of wreckage, disappears from view.

Drawings adapted from FLIGHT

Below, a tiny Nazi parachute billows open and carries the pilot earthward.

Here we have seen in action a new weapon of the Luftwaffe, the Messerschmitt Me-163 rocket fighter.

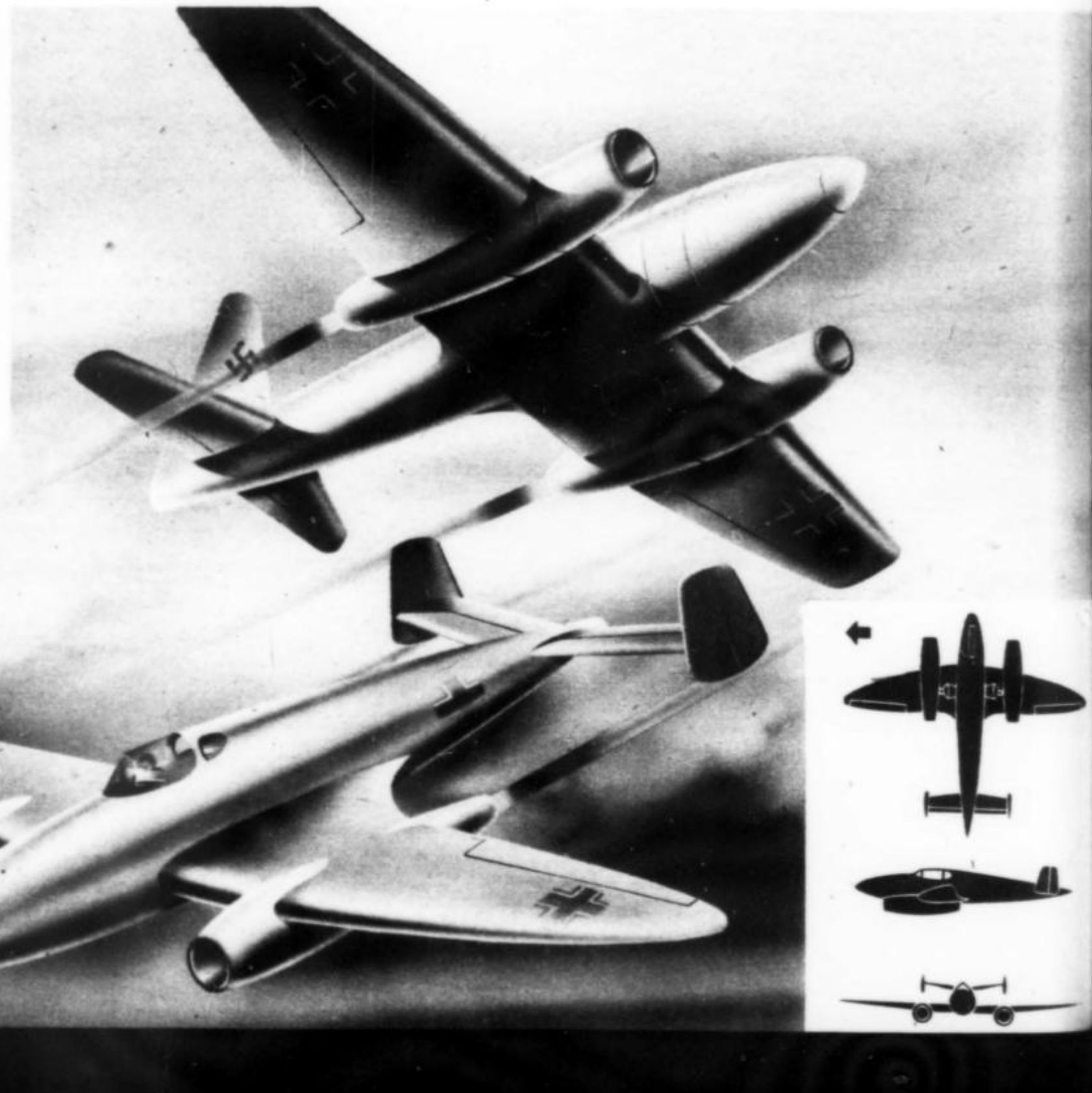
It must have come as quite a shock to American readers some little time ago when newspapers carried stories of German jet-planes in action over the Western Front. In most discussions of the relatively new principle of jet propulsion for aircraft, we have been led to believe that America and England lead the field in this new achievement. To Frank Whittle has gone the credit for developing the first such power unit. We have been told about the Bell P-59 Aircomet and the British Gloster, and suspect that many more Allied fighters of this type are being planned.

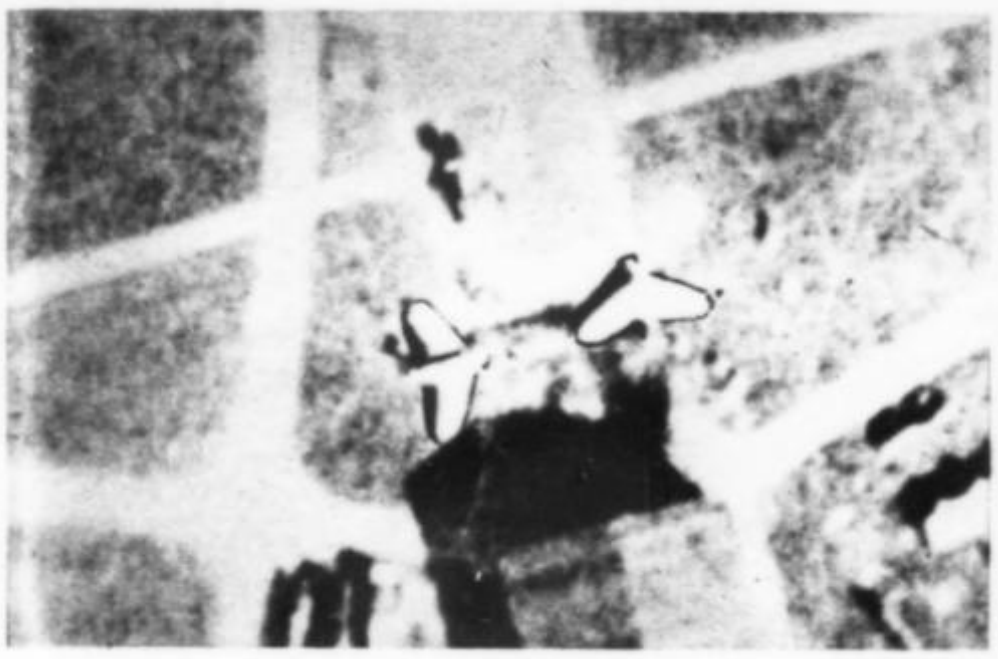
But German science has not been asleep in this field. When the present war started in 1939, Nazi engineers were hard at work over their drawing boards, laying out plans for jet-propelled fighters. Flying models received their first tests as early as 1942. Still previous to this date, in 1941, Ernst Udet, famous German ace of World War I, lost his life in the crash of one of these original test designs.

In 1944, three new fighters took over the defense of the German homeland. One of these, probably a direct result of experiments on jet types, is the Me-163, the world's first successful rocket plane. It is a small ship, approaching the design of the flying wing, with a 30-foot wing span and a short fuselage mounting a fin and rudder assembly but no horizontal tail surfaces. The rocket power plant is installed in the fuselage, and is fed by a liquid fuel containing the oxygen necessary for combustion. The wheels which support the plane on the ground are dropped immediately after take-off, and a skid is used for landing.

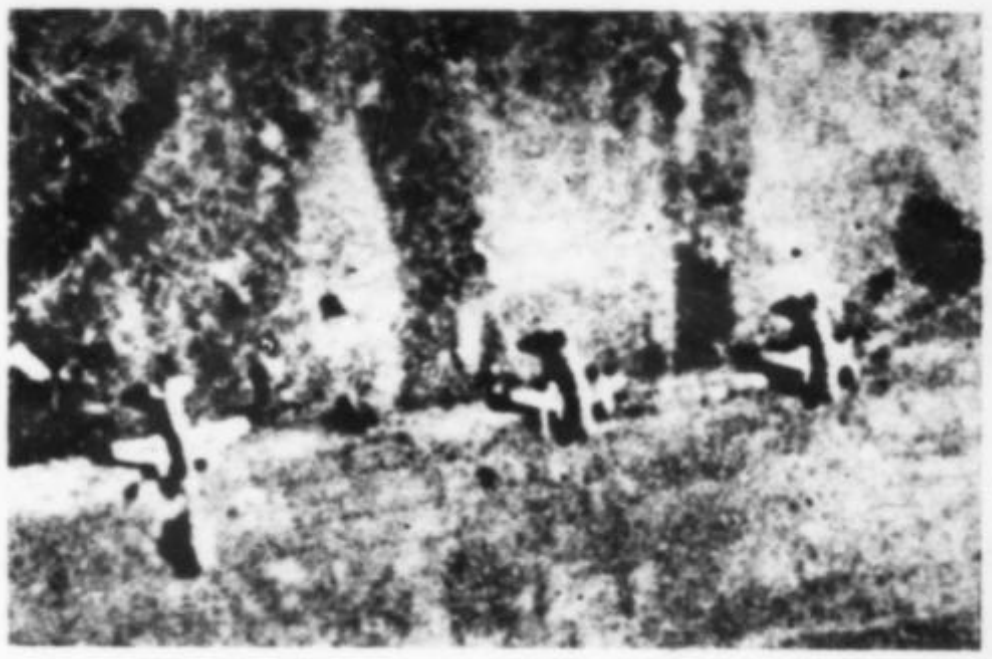
The range of this plane is very short; it is propelled by bursts from its rocket engine rather than by a steady jet impulse. Its speed is reported as being over 500 m.p.h. and its rate of climb is phenomenal. Two types of armament are reported. One is composed of two heavy cannon, which the fighter uses in

Me-262 (top) and He-280 (bottom) are jet-propelled aircraft, also equipped with pilot-ejector mechanism. These models carry jet units slung beneath wings, are heavily armed and are reported to have speeds approaching 500 m.p.h.





First photo of rocket fighters shows two flying wing Me-263s resting near hangar on field at Peenemunde.



Me-262s near runway at Lechfeld air field in Bavaria, important center of Me-262 jet aircraft development.

hit-and-run attacks; the other consists of a warhead placed in the nose of the plane. This type is used for ramming. The pilot jockeys into a favorable position for attack, and then hurls his plane at the enemy. When a few hundred yards from his target, he manipulates a control which blows off the plane's hatch by means of an explosive charge, and a second later a catapult device tosses him backward into the air, whereupon he parachutes to earth. Score: one small German fighter sacrificed for an Allied heavy bomber.

The other two fighters are the single-seat, twin-jet Messerschmitt Me-262 and Heinkel He-280. These are true jet aircraft, employing the same turbine principle of propulsion as the Whittle design and depending upon the oxygen in the atmosphere for combustion. They differ from our own Airacomet in that their power units are mounted out on the wings rather than adjacent to the fuselage.

The Me-262 is a low-wing aircraft with slight wing dihedral, almost square wing tips, a very slim fuselage and tricycle landing gear. Wing span is estimated at 40 feet. Its range is greater than that of the Me-163, but its speed, also, approaches 500 m.p.h. Armament is four heavy cannon mounted in the nose and light bombs held in racks under the wings. Its turbine units are believed to be of Junkers manufacture.

The He-280 differs from the Me-262 in that it has the elliptical wing plan form characteristic of Heinkel aircraft, and twin fins set at the ends of the tail stabilizer. The latter has been given a slight dihedral. The cockpit is faired into the fuselage in the rear instead of having the blister shape of that of the Messerschmitt. Wing span is reported to be less than that of its companion, and its jet units are of different manufacture. Allied pilots maintain that it is not as "clean" an aircraft as the Me-262, and that its speed and performance are not as outstanding. It, too, is equipped with tricycle landing gear.

Both of these jet planes use the pilot-ejector device installed in the Me-163 and said to be used, also, in the recent models of the conventional aircraft of the ever-dwindling Luftwaffe. The Nazis have come to consider their planes more expendable than their pilots.

In action, these jets actually do not present the slick, streamlined appearance shown in the drawings; their silhouettes are marred by huge auxiliary fuel tanks which they must carry beneath their wings to give them a practical range. These offer a large resisting surface to the airflow, and doubtless prevent the planes from attaining a speed even higher than 500 m.p.h.

The German jets are used solely for defense against Allied daylight raiders. Their short range has made it impossible for them to stray too far from their bases. Have they been successful in stopping our attacks? The answer is "no."

Their efforts have met with comparative failure due to their limited number, and their pilots lack of experience.

However, there is no doubt the Germans are ahead of us in the field of jet propulsion as shown not only by these planes, but also by their ingenious buzz-bomb. Should the war continue for any great length of time, this fact might have dire consequences. General Eisenhower has said, "If we don't get into jet propulsion manufacture soon, or before the Germans get into mass production, it will be a serious matter." We must heed his warning!

MECHANIX ILLUSTRATED©

15

FEBRUARY

REFERENCE
2nd FLOOR
JAN 15 '49

400-Pound Model Engine
Runs on Live Steam
See Page 78

STRANGE ANIMALS YOU NEVER SAW

IS YOUR JOB KILLING YOU?

Build Snipe, World's Most Popular Sailboat

volume 40 number 4

mechanix illustrated

february 1949

Title Registered U.S. Patent Office

Staff Cover photo by Grayson Tewksbury

special features

Most Dangerous Job? 61

How Radar Sentries Will Guard America 62
By Frank Tinsley

I Rode On A Highway Of Diamonds ... 64
By Henry Albert Phillips

New In Science 67, 76

Is Your Job Killing You? 68
By Donald G. Cooley

MI Tests The '49 Cadillac, Oldsmobile, Buick 70
By Tom McCahill

Hobby Hall Of Fame—Glenn L. Martin .. 74

Roto-Chutes For Rocket Pilots 75

Assembly Line For Baby Hudsons 77

Model Maker's Dream Engine 78
By Fred M. De Ripperda

Do Prehistoric Monsters Still Exist? 80
By Willy Ley

Master Micro-Carpenter 84
By Louis Hochman

New For The Sportsman 86

New For The Home 87

Hair Mail Special 88

Money-Making Idea—I'm A Mail-Order Cabinet Maker 90
By Al Grossman

Helicopters Grow Up 92

This Month's Prize Gadget—Magnetic Soap Holder 93

Farm-Boy Inventor 94

Old In Science 95

Editor's Workbench 20

Invention Clinic 24

(continued on page 10)

A Fawcett Publication

Copyright 1949 by Fawcett Publications, Inc.

W. H. FAWCETT, Jr. . . . . President
ROGER FAWCETT . . . General Manager
RALPH DAIGH . . . . . Editorial Director

WILLIAM L. PARKER . . . . . Editor

FEATURE STAFF

GILBERT PAUST . . . . . Feature Editor
FRED HORSLEY . . . . . Science Editor
ARTHUR UNGER . . . . . News Editor

CRAFTS & HOBBIES STAFF

LARRY EISINGER . Crafts & Hobbies Editor
ROBERT BRIGHTMAN . Photography Editor
JOHN KINGDON . . . . . Boating Editor

ART STAFF

FRANK A. TAGGART . . . . . Art Editor
HAROLD E. KELLY . . . . . Art Associate

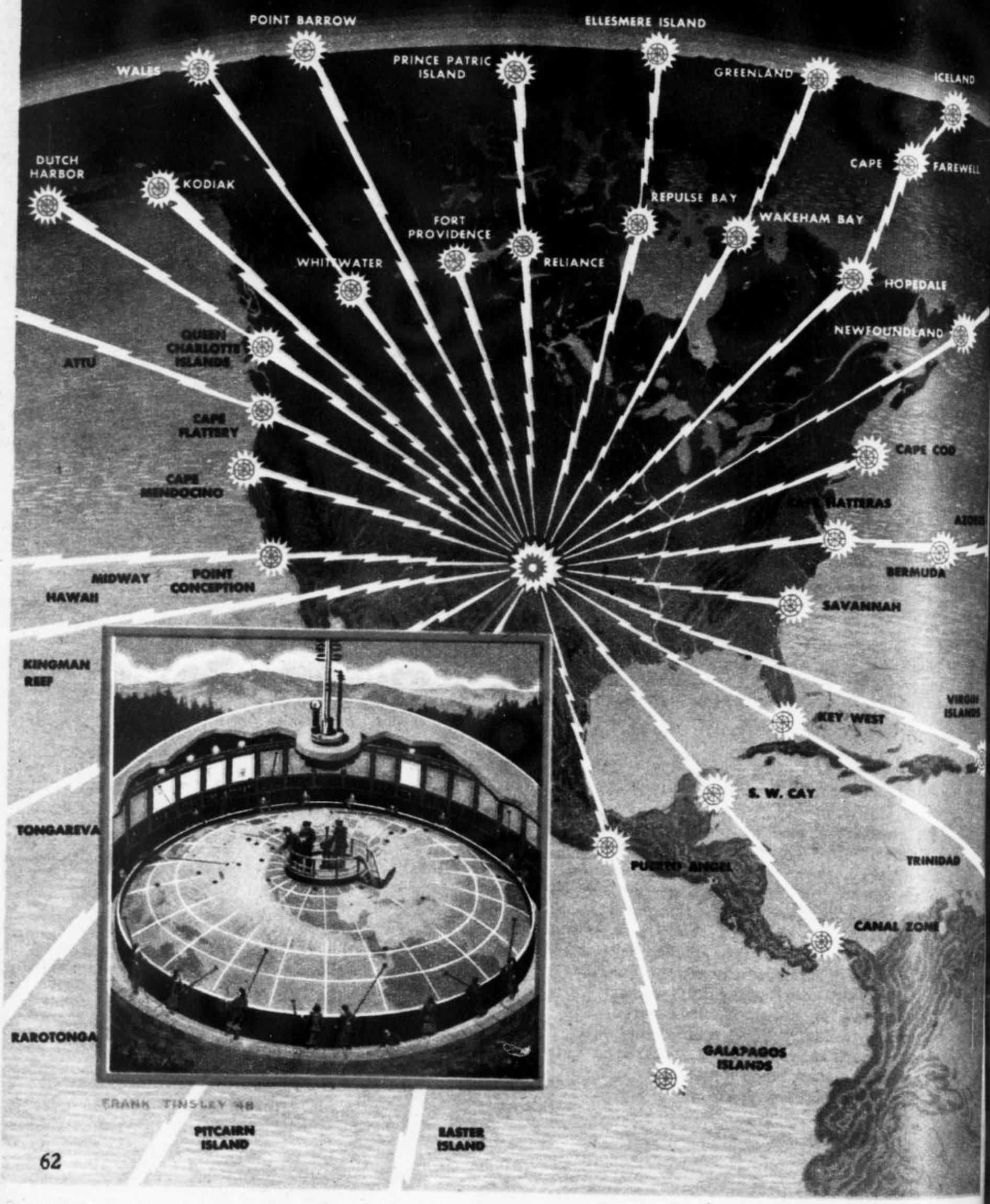
JO O GRADY . . In Charge of Production

MECHANIX ILLUSTRATED is published monthly by Fawcett Publications, Inc., Fawcett Building, Fawcett Place, Greenwich, Conn. Printed in U.S.A. Editorial offices: 67 W. 44th St., New York 18, N. Y. Advertising offices: New York 18, 67 W. 44th St.; Chicago 1, 360 N. Michigan Ave.; Los Angeles, H. P. Houston, Edward S. Townsend Co., 643 S. Flower St.; San Francisco, Edward S. Townsend, Edward S. Townsend Co., Russ Building. General Offices, Fawcett Building, Fawcett Place, Greenwich, Conn. Elliott D. Odell, Advertising Director; Roscoe K. Fawcett, Circulation Director; Allen E. Norman, Secretary; Gordon Fawcett, Treasurer; Al Allard, Art Director. Entered as second-class matter at the post office at Greenwich, Conn., under the act of March 3, 1879. Additional entry at Louisville, Ky. Copyright 1948 by Fawcett Publications, Inc. Reprinting in whole or in part forbidden except by permission of the publishers. Title registered in the U. S. Patent Office. Address manuscripts to MECHANIX ILLUSTRATED, 67 West 44th St., New York 18, N. Y. All remittances and correspondence concerning subscriptions as well as notification of change of address should be addressed to Circulation Department, Fawcett Building, Fawcett Place, Greenwich, Conn. Not responsible for lost manuscripts or photos. Unacceptable contributions will be returned, if accompanied by sufficient first class postage. Price 15c per copy. Subscription price $1.80 per year in Canada, the United States and possessions. Foreign subscriptions $2.30 per year. Foreign subscriptions and sales should be remitted by International Money Order in United States funds; payable at Greenwich, Conn. Advertising forms close fifth of second month preceding date of issue.

MEMBER AUDIT BUREAU OF CIRCULATIONS

How RADAR SENTRIES

With a centrally controlled network like this, says the author, we could insure ourselves against an atom war Pearl Harbor.



Will Guard America

By Frank Tinsley

ELECTRONIC watchdogs may save you from atomic destruction!

Just one sneak atom-bomb attack on a single target city would cost thousands of American lives and millions of dollars in vital property. Our only guarantee against such an atomic catastrophe is the creation of a system of overlapping search radars to warn us against approaching disaster.

The advent of 1000-mph raiders and long-range guided missiles cuts the margin of precious warning time. Our sentries must be posted far afield or the confusion caused by large numbers of missiles launched simultaneously could cause a breakdown just as the British spotting system was disrupted by V-2 attacks during World War II.

This type of protection system is being urged by F. H. Lack, chairman of the mobilization committee of the radio industry. He suggests that radar stations be arranged in concentric circles so that their electronic eyes would scan every inch of approach to the continental United States.

The outer ring in the network would be as far flung as our possessions and defense treaties allow. It would detect the movement of long-range bombers and missiles early in their flight. The inner or shoreline ring would pinpoint sneak raids by short-range, submarine - launched missiles or carrier planes.

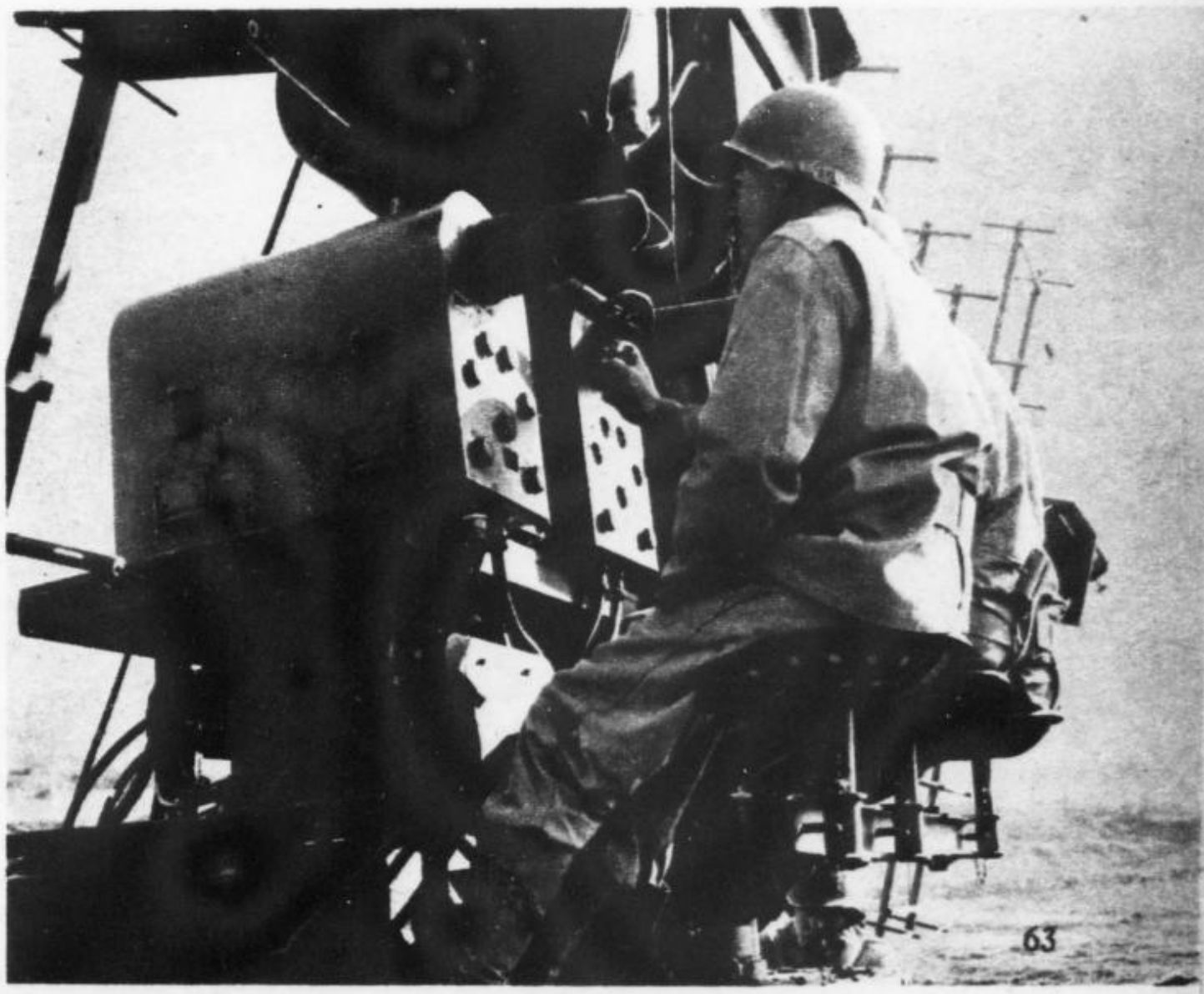
Radar images picked up by the day-long radar sentries would be sent over a continuous video transmission to a command center where necessary defense measures could be undertaken immediately. The operation commander would dispatch interceptor planes and ground-to-air missiles from any point on the radar ring. The whole setup would be augmented with radio, telephone and teletype communications wherever possible.

Illustrations on the opposite page show possible location points for such a network. Search stations are indicated by red radar aerials on white stars; converging video paths and relays are represented by flashes.

The inset shows one possible layout of the central control post. Placed in a "pulpit" overlooking the situation map are the operations commander and his aides. The map shows the entire search area of the system. And beneath its floor is a communications center through which the commander can talk with any plane, station, base or headquarters in the system.

Around the walls of the circular building are video screens and control panels, each tuned in on a specific radar post. The screens are gridded so that distances between friendly and enemy air units can be computed at any moment. In the gallery, Wacs record movements on the map.

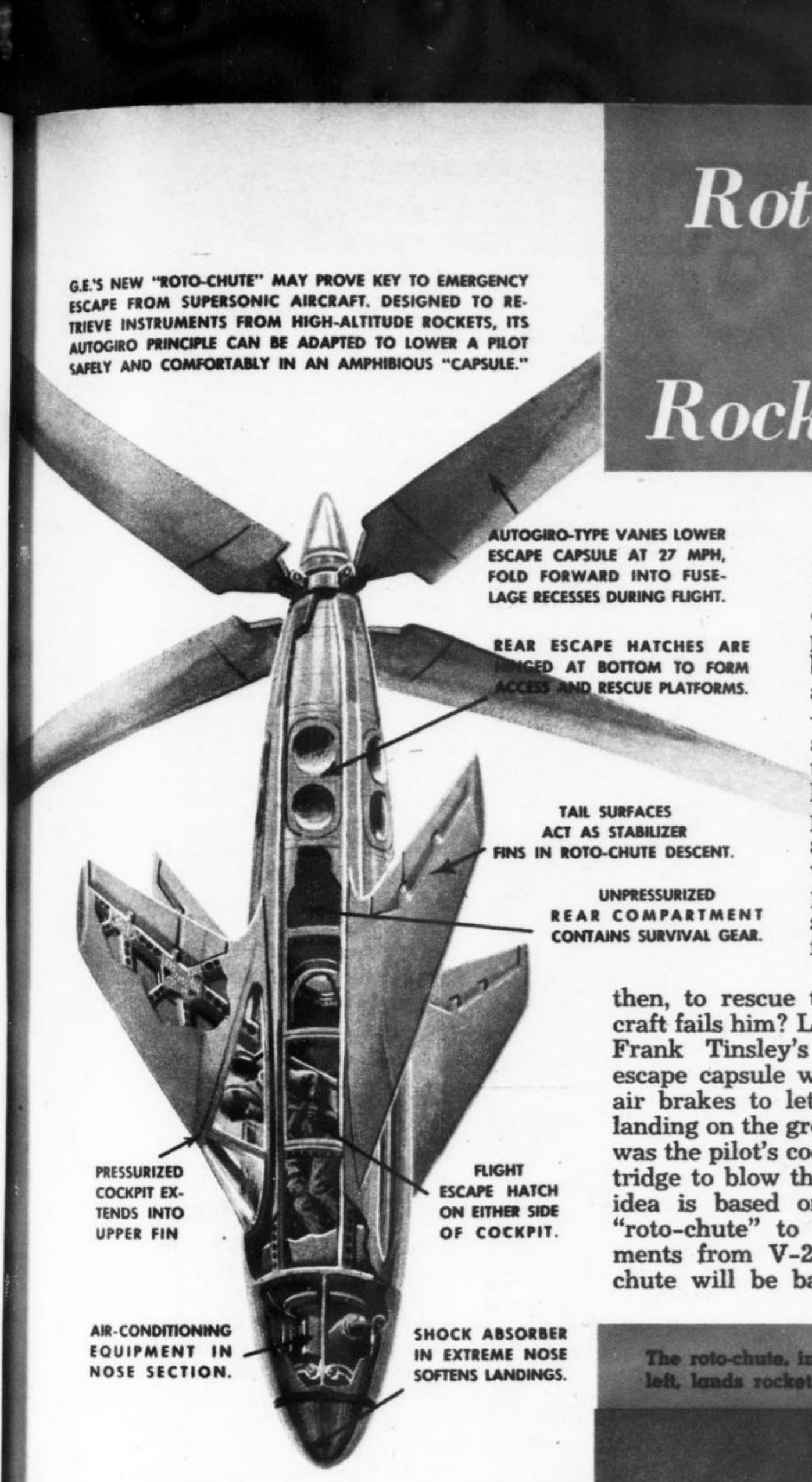
The cost of this network of electronic watch-dogs would be terrific. But in the long run, every dollar spent might well be matched by a life saved. •



Armies of radar operators on 24-hour duty could supply the command center with reports of enemy air activity.

G.E.'S NEW "ROTO-CHUTE" MAY PROVE KEY TO EMERGENCY ESCAPE FROM SUPERSONIC AIRCRAFT. DESIGNED TO RETRIEVE INSTRUMENTS FROM HIGH-ALTITUDE ROCKETS, ITS AUTOGIRO PRINCIPLE CAN BE ADAPTED TO LOWER A PILOT SAFELY AND COMFORTABLY IN AN AMPHIBIOUS "CAPSULE."

Roto-Chute for Rocket Pilots



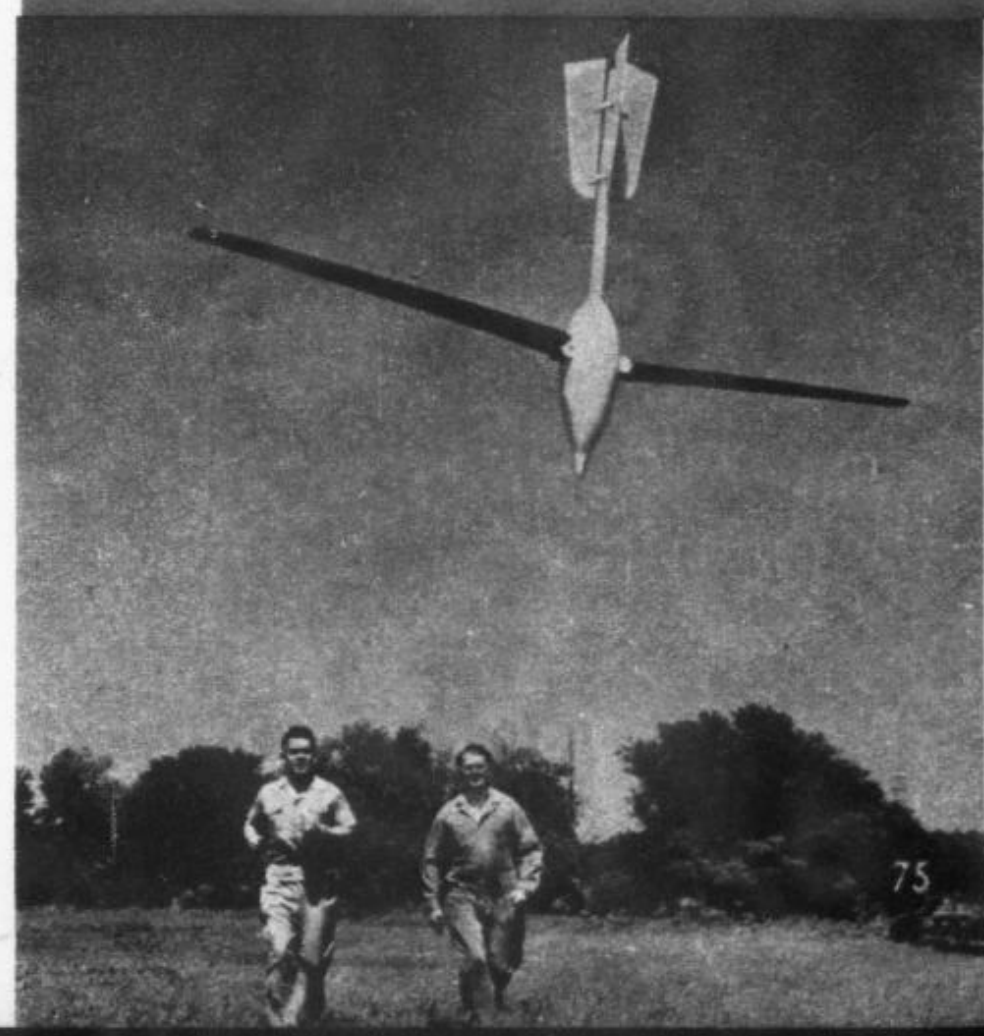
SUICIDE is the word for the pilot who tries to escape from a supersonic plane by parachute. The billowing fabric 'chute was a wonderful aerial lifesaver —till Air Force pilots started streaking faster than sound in rocket planes like the Bell XS-1. The impact of the air at such speeds is so terrific that it will not only shred the parachute like a burst of shrapnel but also peel the flesh off the pilot's bones.

What can science do, then, to rescue the rocket pilot when his craft fails him? Look to the left, at MI artist Frank Tinsley's solution: a pressurized escape capsule with unfolding rotary-wing air brakes to let the flier down to a safe landing on the ground or at sea. The capsule was the pilot's cockpit before he fired a cartridge to blow the unit off to the rear. The idea is based on General Electric's new "roto-chute" to bail out research instruments from V-2 rockets. Soon, the roto-chute will be bailing out rocket pilots. •

FRANK TINSLEY '48

LANDING AT SEA, THE CAPSULE FLOATS UPRIGHT LIKE A BUOY, STEADIED BY ITS FINS AND ROTOR VANES. FOOD, WATER AND SURVIVAL GEAR KEEP PILOT ALIVE UNTIL RADIO AND POSITION LIGHT BRING RESCUERS.

The roto-chute, invented by G.E.'s I. B. Bensen, left, lands rocket instruments at easy 27 mph.



HELICOPTERS GROW UP

YESTERDAY'S fragile, single-seat helicopter is fast becoming a revolving-wing giant!

The largest specimen yet to fan its way into the skies was unveiled recently at the British Aircraft Constructors' show at Farnborough, England. It's the Cierva W-11 *Iron Horse,* with three rotors driven by a single Rolls-Royce Merlin engine.

But we're going to beat that! On the planning board of our Piasecki Helicopter Corporation is a pinwheel to end all pinwheels. This XH-16 is twin-rotored and all metal, as large as a DC-4, with a detachable freight or passenger carrier comparable to a Greyhound bus. The passenger capacity has not yet been revealed, but it is estimated at 50 military or 70 civilians.

The passenger cabin attached to the craft's belly can be replaced quickly to speed up loading and unloading operations. Its most efficient use in war will be as an air ambulance.

When will it fly? In two years, Piasecki says.

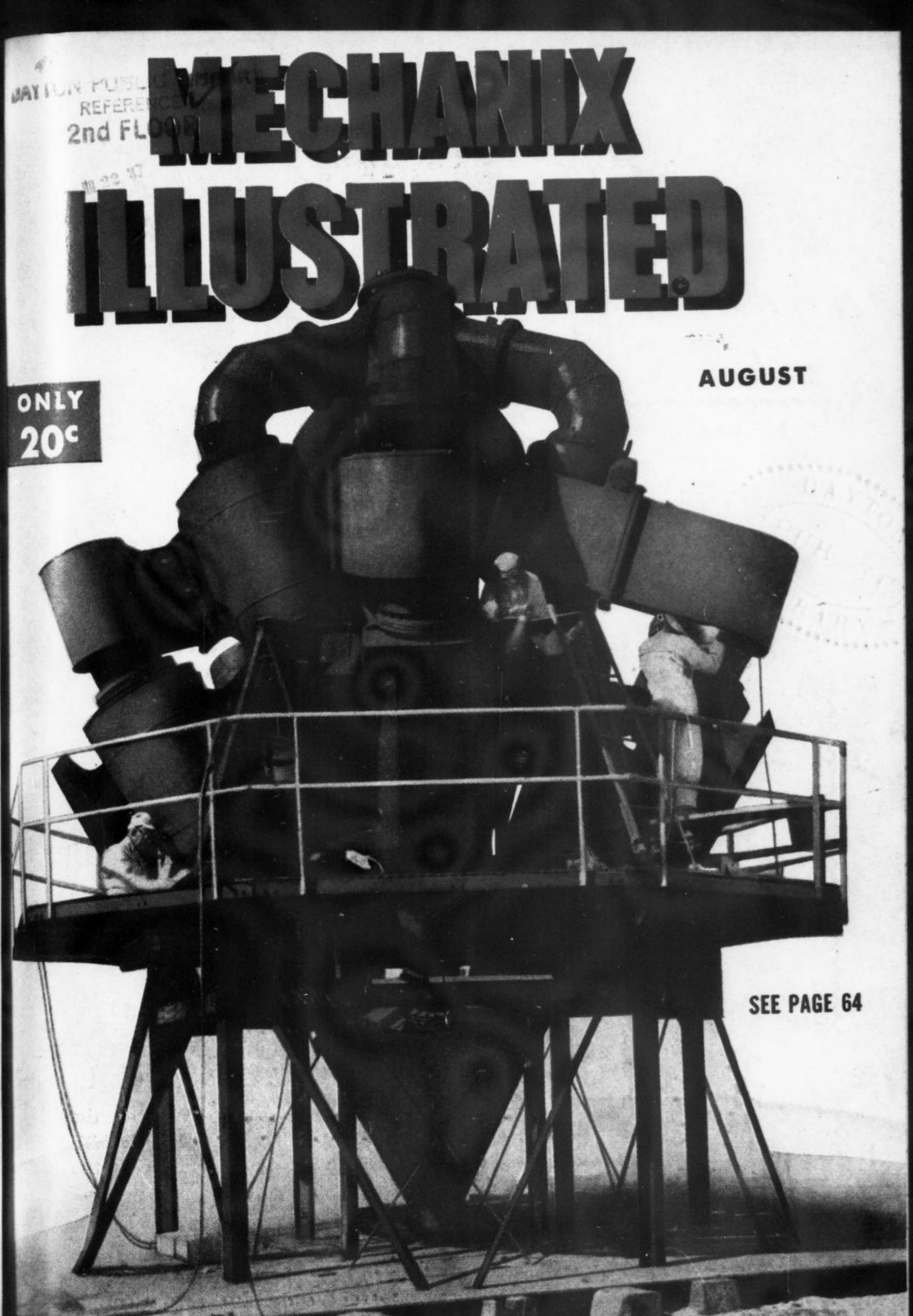
Cierva W-11, top of page, now is world's largest, but Piasecki XH-16, bottom, will carry about three times its freight load.

DAYTON PUBLIC LIBRARY
REFERENCE
2nd FLOOR
JUL 22 '47

MECHANIX ILLUSTRATED

AUGUST

ONLY 20c



SEE PAGE 64

SHOOT LIKE A G-MAN! BY J. EDGAR HOOVER

mechanix illustrated

Title Registered U. S. Patent Office

A Fawcett Publication

W. H. FAWCETT, Jr., President — ROGER FAWCETT, General Manager — RALPH DAIGH, Editorial Director

ROBERT HERTZBERG, Executive Editor
GILBERT PAUST, Feature Editor
WAYNE AMOS, News Editor
HARRY BATES, Science Editor
FRANK A. TAGGART, Art Editor
LARRY EISINGER, Crafts & Hobbies Editor
ROBERT BRIGHTMAN, Photography Editor
WILLIAM E. DUGGAN, Boating Editor
NORMAN C. LIPTON, Associate Editor
JO McCALLION, In Charge of Production

AUGUST, 1947 — VOL. XXXVIII, No. 4

Cover photo courtesy Shell Oil Co.

SPECIAL FEATURES

Growl, Please! 49
by John Edwin Hogg
He spends his life photographing lions

Shoot Like a G-Man! 53
by J. Edgar Hoover
How to use small arms—and remain alive

Eel-ectricity 58
The electric eel's just full of juice

Super Subway 60
by Lester David
Long long way from Ug's cave

Fill 'Er Up—with Synthetic! 64
by Gold V. Sanders
Man-made fuels get out and compete

Plastic Makes Them Whole 68
Surprising counterfeits of living parts

Luxury in a Giant Wing 71
by Frank Tinsley
All aboard the wingliner of tomorrow!

MI Tests the '47 Ford and Mercury 78
by Tom McCahill
MI's auto expert gives 'em a good once-over

I'm Waiting with the Basket 82
by Slap-Happy O'Toole
Try driving this way! It'll kill you!

Portable Stage for Hollywood 84
by John Weld
Next scene? Bring on the next stage

National Crafts and Hobby Contest 86
More than $2,000 in cash prizes—18 beautiful trophies—for active hobbyists

The Libellula 90
Tail-first high-speed jet-powered mail plane

Quiet up There, Please! 92
by C. B. Colby
Noisy planes are being taught to behave

Collapsible Double Decker 96
Trailer grows a second story

Jig-Saw Journeys 97
by William A. Burns
Chief vocation of a man with 40 vocations

140,000 Hairs Make a Wig 102
Star wears wig, studio saves money

Plane Swallows Auto 104
It opens like a mouth. The car goes in

Dragonfly 105
A high-performing glider—with an engine

These Are Our Garden Enemies 106
by William H. White
Raise flowers or vegetables—or insects

Sheet-Metal Murals 110
Art and Decoration in a sheet of metal

Editor's Workbench 12

Invention Clinic 20

Copyright 1947 by Fawcett Publications, Inc.

MECHANIX ILLUSTRATED is published monthly by Fawcett Publications, Inc., Fawcett Building, Fawcett Place, Greenwich, Conn. Printed in U.S.A. Advertising and Editorial Offices, 67 West 44th St., New York 18, N. Y. West Coast Representatives: Los Angeles, H. P. Houston, Edward S. Townsend Co., 645 S. Flower St.; San Francisco, Edward S. Townsend, Edward S. Townsend Co., Russ Building, General Offices, Fawcett Building, Fawcett Place, Greenwich, Conn. Eliott D. Odell, Advertising Director; Roscoe K. Fawcett, Circulation Director; Allen E. Norman, Secretary; Gordon Fawcett, Treasurer; Al Allard, Art Director. Entered as second-class matter at the post office at Greenwich, Conn., under the act of March 3, 1879. Additional entry at Louisville, Ky. Copyright 1947 by Fawcett Publications, Inc. Reprinting in whole or in part forbidden except by permission of the publishers. Title registered in the U. S. Patent Office. Address manuscripts to MECHANIX ILLUSTRATED, 67 West 44th St., New York 18, N. Y. All remittances and correspondence concerning subscriptions as well as notification of change of address should be addressed to Circulation Department, Fawcett Building, Fawcett Place, Greenwich, Conn. Not responsible for lost manuscripts or photos. Unacceptable contributions will be returned, if accompanied by sufficient first class postage. Price 20c per copy. Subscription price $2.40 per year in Canada, the United States and possessions. Foreign subscriptions $3.15 per year. Foreign subscriptions and sales should be remitted by International Money Order in United States funds, payable at Greenwich, Conn. Advertising forms close fifth of second month preceding date of issue.

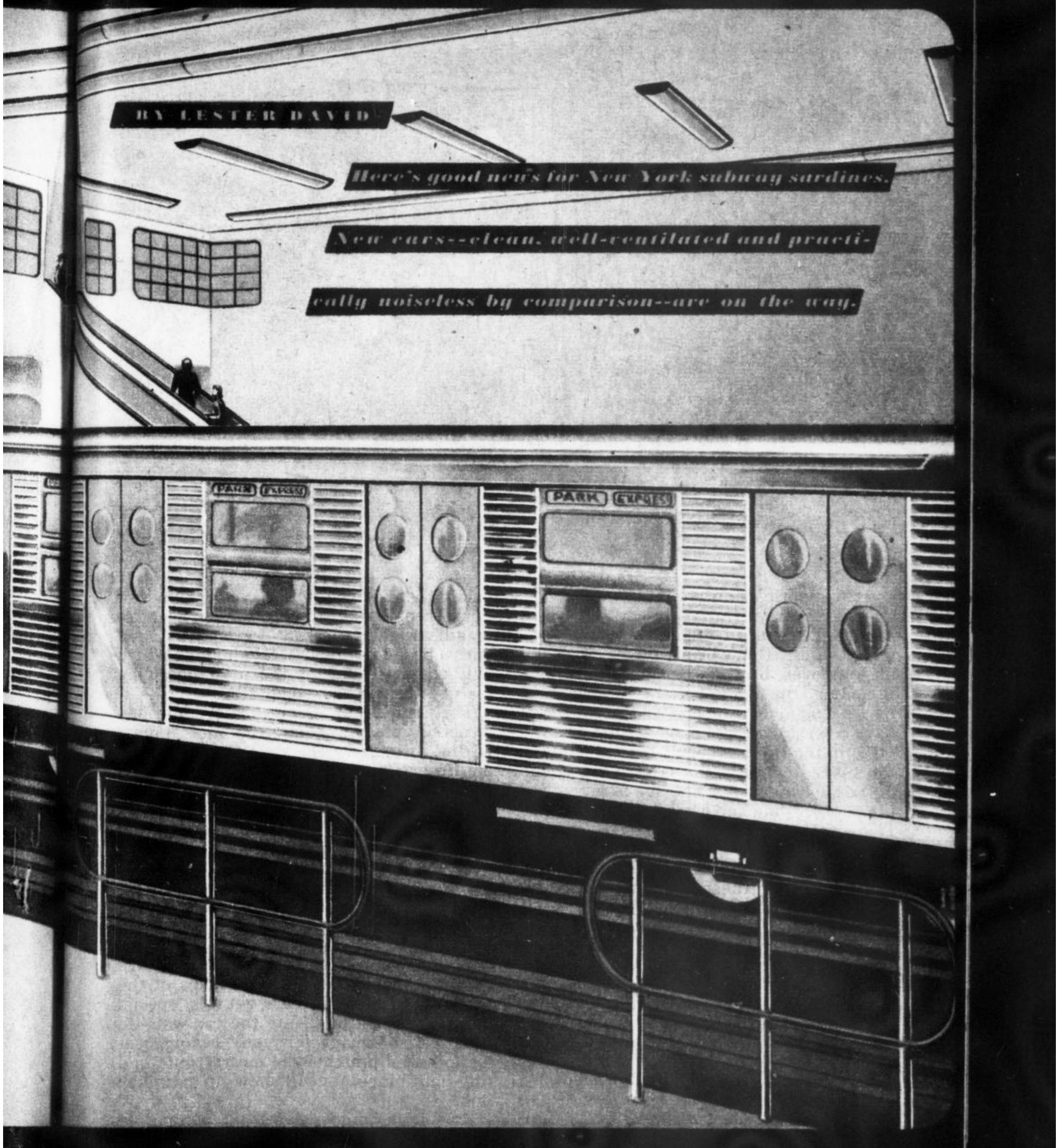
MEMBER AUDIT BUREAU OF CIRCULATIONS

super SUBWAY

BY LESTER DAVID

Here's good news for New York subway sardines.

New cars--clean, well-ventilated and practically noiseless by comparison--are on the way.



ONCE upon a time that poorest of poor fish, the New York subway sardine, had a long and wonderful dream. He dreamt he boarded a bright, clean subway train, all shining with chromium and fluorescent lighting and rode noiselessly through the dark tunnels breathing clean, heated and germ-free air.

And then he woke and sighed a deep sigh. It was time to

Continued . . .

Left: Shot of subway sardines jamming into present noisy and dirty cars. Visitors go for experience—but once is enough.

Right: Interior view of new car. Note ventilation ducts under seats and in ceiling, improved (non-blinking) lights and illuminated map, left.

start for work again and buck the jam in the noisy, dirty, drafty old cars. It was a beautiful, beautiful dream.

But whoa! Don't brush the stardust out of your eyes, brother, because this dream is coming true and in less than a year. Yep, here's that dawn of a new day the poets have been singing about since Aunt Pru ran off with the Injun. This is the millennium, the silver lining, the pot of gold at the end of the subway tracks. They've finally pitied the poor sardine and are coming out with a 1948-model, de-luxe upholstered can for him and that's no olive oil!

It is all part of Pa Knickerbocker's plan to cushion the transportation woes of his long-suffering family.

Already he has put shiny new buses along the city's arteries to replace the Toonerville trolleys which have been clanging along Big Town's streets since the days when the turkey trot was hot stuff and Dewey was the name of a sailor raising what-for in Manila Bay. He has ripped down a good many elevated structures which were straddling the thoroughfares like big black spiders and substituted streamlined electric trolleys or smooth buses.

Now he's working on the subways and take a long, gloating look at the specifications of those super-dupers he's got on order:

The lighting system, to begin with, will be a dilly. Each car will have four lines of fluorescent lights running down its entire length, mighty pleasant to read by, and with a brand new electrical gimmick which will eliminate one of the most annoying features of subway commuting.

The innovation involves a tricky construction of power sources and unique wiring to prevent the cars from blacking out for brief intervals every time the trains hit a break in the third rail. The bulbs in the present cars obtain their power directly from the third rail but the new lighting system will be completely independent. This will stop, once and for all, the spots-before-the-eyes sensation every subway newspaper reader gets after a long ride under the existing on-again off-again lights.

And if you're one of those who have trouble reading the intricate maps of the subway system in the cars, get this: special lighting will be built into the car walls to translate the maps for you. Fluorescent lights will illuminate the entire route and tiny light pinpoints will show up each station.

Rosy item number two is the ventilation system, developed after long research, which will permit riders to inhale during a journey without feeling that they are walking through a fat-rendering plant on a hot July afternoon or the elephant house at the zoo. There's going to be a specially-

continued . . .

developed forced-draft ventilation system circulating healthy, unsmelly, germless air—heated in winter—through ducts on the ceilings and vents under the seats.

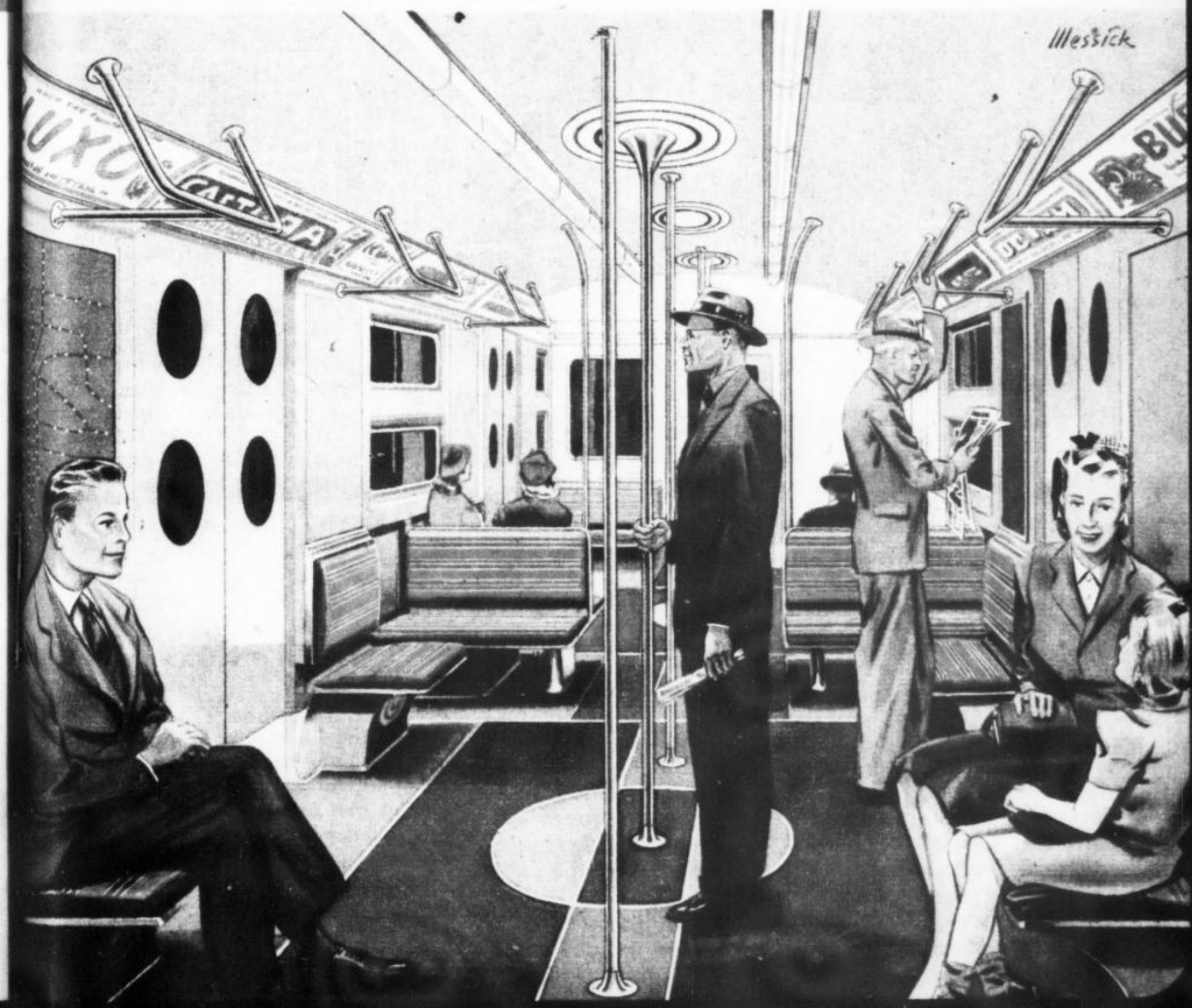
Engineers explain it isn't possible just yet to install full-fledged air conditioning since the equipment involved is much too bulky, requiring fully half the length of a subway car.

There won't be many changes in the seating arrangements from those now in effect on the Independent Line. The present setup of doors and seats here has proved the most efficient yet devised for speedy handling of crowds. But there definitely will be a vast difference in what you sit on and how you sit.

You will ease into seats upholstered in Velon, a plastic material now in wide use for seats in the latest model airliners and railroad trains. Out the window will go the hard, non-bouncy cane now employed. The seats themselves will be two inches longer than the present ones in order to reduce "passenger overhang," as the engineers refer to it. By this slightly scientifically sounding phrase they apparently mean that there will be less difficulty for a guy with a size 48 waist to ease himself into a seat next to a size 46.

Next major item is noise, or lack of it. Now passengers will be able to carry on practically normal conversations instead of hollering into each other's ears as the trains roar deafeningly on. The new trains will practically purr along with the new sound-reducing devices being installed. They will all have helical gears running in an oil bath, rubber insulation between the wheels and the body, special motor mountings and new dynamic brakes which use the motors for stopping.

The floors of the new trains will be designed with special color arrangements to make the interiors more cheerful. Side doors will be [*Continued on page* 163]



The British are working feverishly on a trans-ocean wing, too. They've been using the 6,000-lb. flying-wing glider shown above for tests.

snacks, we have the grill over yonder, with permanent tables and chairs."

He waves toward a large, well appointed alcove room opening off the right side of the lounge. It, too, is furnished with built-in seats and is divided into nooks for large and small parties. Just aft of the grill, with corner doors servicing both it and the lounge area, is a compact electrified galley, equipped to serve anything from a fast sandwich to a pre-frozen full course dinner.

Turning to our left, we stroll through an open archway and find ourselves facing the ship's bar. Already, a sprinkling of thirsty tourists are clustered along the gleaming blond mahogany. Comfortable tables and chairs line the sides of the room and a smiling bar steward is bustling about in attendance. Doors at either end of the bar open into inner rooms. Above one is the simple sign, "Gentlemen." The other, a connecting smoking room, is equipped with green-topped tables for the inevitable stag card parties.

Over a quick one at the bar, the Purser informs me that the plane's passenger accommodations extend still further. A block of eight pullman-type staterooms flank the public rooms in each wing, offering privacy for ill travelers, business conferences, etc. Each contains an upper and lower berth, clothes lockers, washing and toilet facilities.

Back in the lounge, I find that Jill has finally emerged from the powder room and thanking the Purser for his conducted tour, we head for the observation deck. Wide double archways give access to the ship's transverse corridor. Wainscoated in the omni-present leather covered foam-rubber, the passage is naturally lighted by Plexiglas panels in its forward wall. Studying their odd, triangular shapes, I suddenly realize that they are set in the openings of a truss structure and that we are walking inside a huge hollow girder six feet wide and fourteen feet high. There is a vaulted ceiling eight feet above the passage floor and I learn later that the space above and below is packed with ducts, electrical conduits, control leads, etc. Archways open into the leading-edge every twenty feet or so, with illuminated signs above them to specify the seat numbers of each block. Consulting our checks, Jill leads the way to the appropriate door.

The leading-edge is glassed in with double walls, [*Continued on page* 181]

Luxury in a Giant Wing

A new wing, twice size of the XB-35 above, is now being designed. For conception, turn page.

Pull up a deck chair and join us in a thrilling preview of trans-oceanic air travel to come.

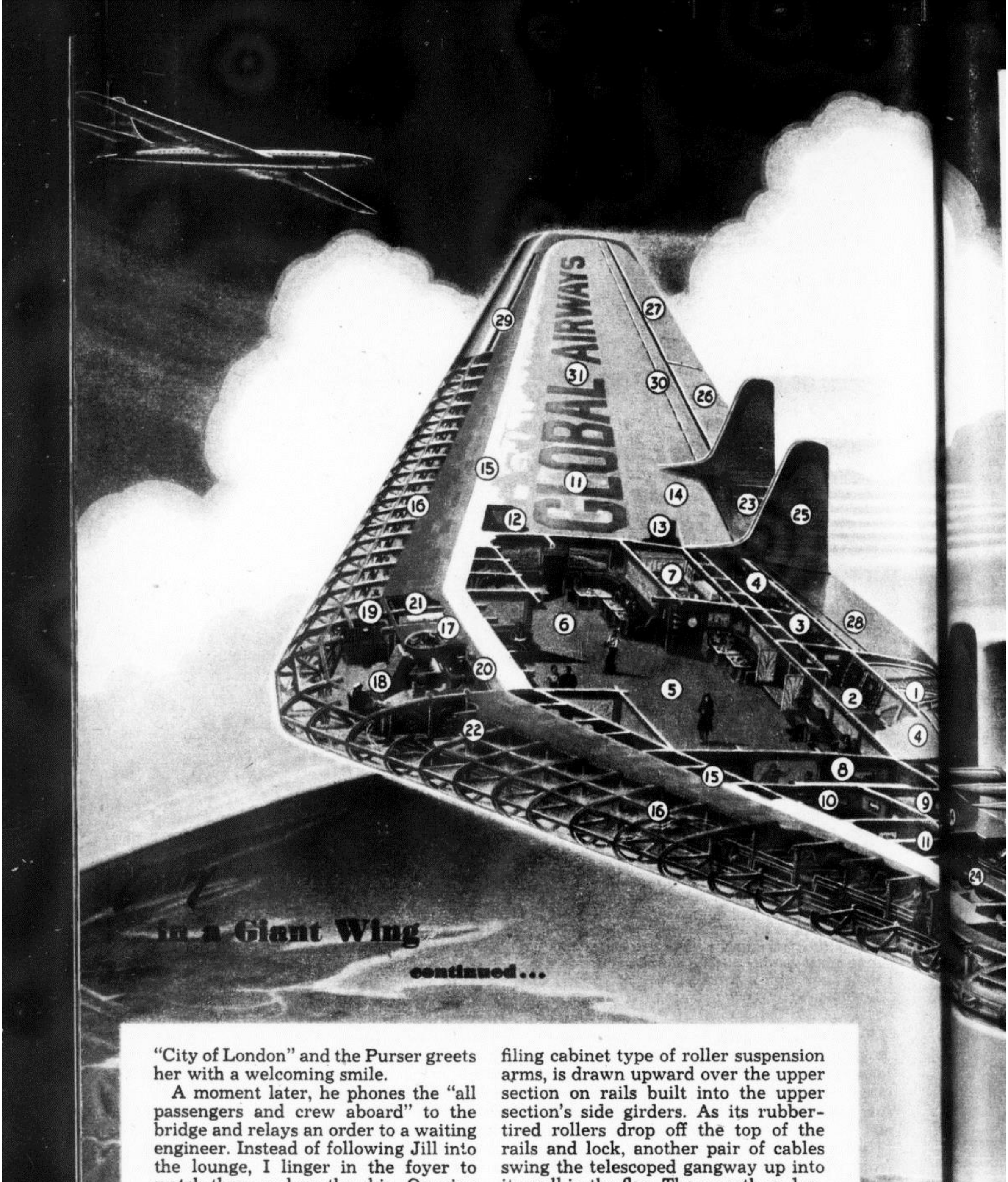
BY FRANK TINSLEY

Northrop's multi-jet YB-49 (jet version of the XB-35) will take to the air this summer and already, a new flying wing, twice the size of this 172-foot monster, is said to be taking form on the designer's drawing board! The tremendous advances in passenger facilities possible in such a huge craft are graphically illustrated in the following pages by our artist-engineer, who supplements his paintings with a word picture of trans-oceanic travel in the coming decade. . . .

IT IS quite a walk from the passenger gate to the gangway beneath the center section of the "City of London." Above our heads, the enormous 330-foot wing of the trans-Atlantic luxury liner seems to stretch out interminably and its great breadth shadows the runway. Viewed from the upper terrace of the terminal, the big, bat-shaped wing had seemed to hug the ground, but now, walking beneath it, I can see that its underside towers at least 25 feet above the concrete.

A rubber-tired elevator truck speeds past us with the last tag-ends of luggage and I am relieved to see our bags safely among them. We watch as it maneuvers into position and its load clanks upward through an open baggage hatch with careless accuracy. At the foot of the gangway, a politely impatient steward hustles us up the red carpeted steps and I realize that we are among the last passengers to board the ship.

This is my first trip in the big, new flying-wings and as we reach the head of the gangway, I glance around curiously. We are in a foyer about ten feet wide, handsomely decorated in warm shades of beige, relieved by modernistic strips of silvery mat aluminum. Sunlight floods down through a streamlined Plexiglas bubble set in the upper wing surface, evidently to give added headroom. Doors break the wall surface on either side and on the right is a Purser's window where we check our tickets against the passenger list and Jill deposits an envelope of jewelry to be locked up for safekeeping. Jill, a dress buyer for one of our better shops, has crossed several times in the



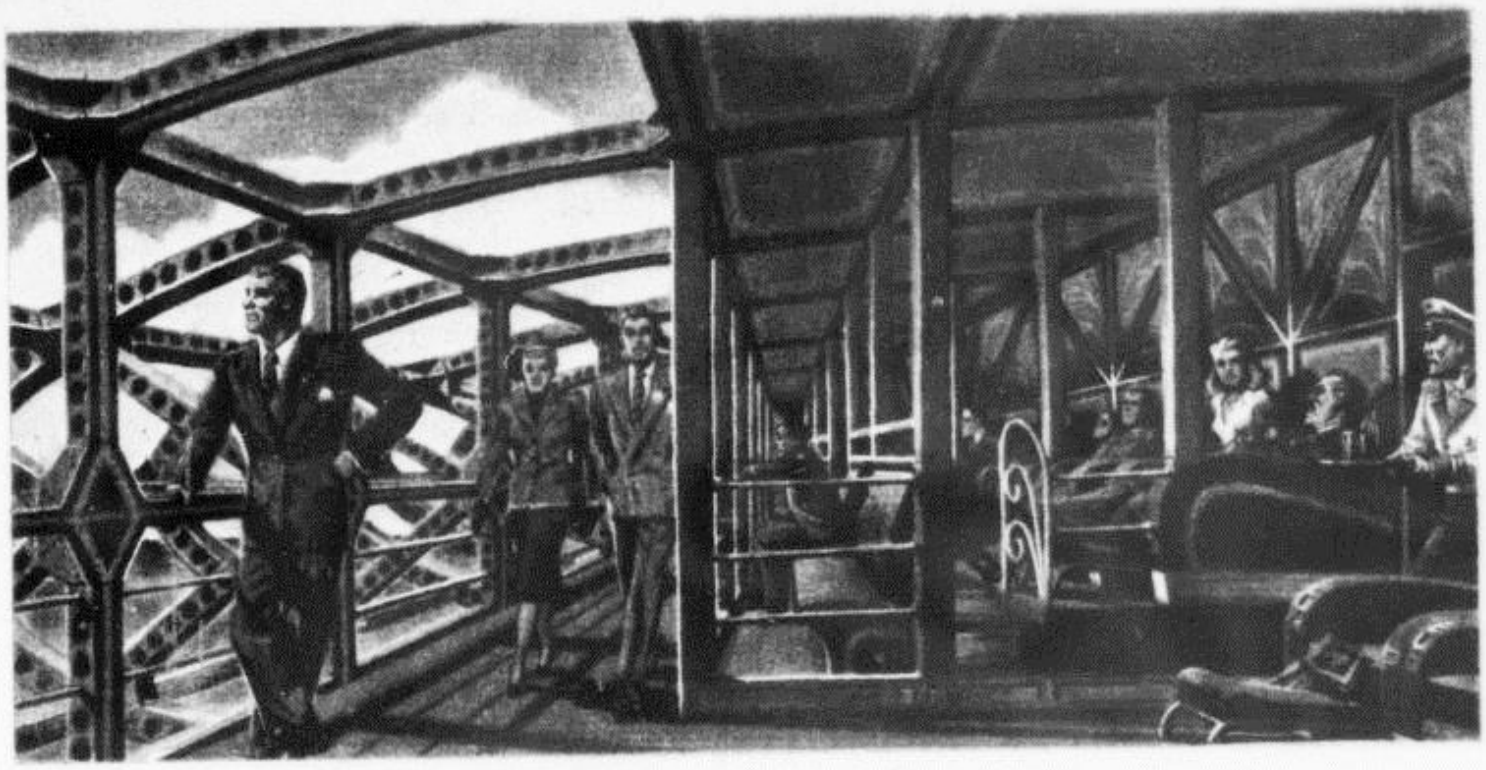
In a Giant Wing

continued...

"City of London" and the Purser greets her with a welcoming smile.

A moment later, he phones the "all passengers and crew aboard" to the bridge and relays an order to a waiting engineer. Instead of following Jill into the lounge, I linger in the foyer to watch them seal up the ship. Opening a small panel in the after bulkhead, the crewman nonchalantly punches a button and a hidden electric winch hums. The lower section of the gangway, mounted on what seems to be a filing cabinet type of roller suspension arms, is drawn upward over the upper section on rails built into the upper section's side girders. As its rubber-tired rollers drop off the top of the rails and lock, another pair of cables swing the telescoped gangway up into its well in the flap. The smooth undersurface of the upper section forms a flush door that closes the entrance opening and restores the flap's airflow contour.

As I watch the swift, smooth opera-



The leading edge is glassed in with double walls between which warm air is circulated to heat the promenade. Farther back are reserved deck chairs.

Key—1: Retractable entrance gangway, 2: Foyer, 3: Purser's Office, 4: Baggage Rooms, 5: Main Lounge, 6: Grill, 7: Galley, 8: Bar, 9: Men's Room, 10: Men's Smoking and Card Room, 11: Private Staterooms, 12: Powder Room, 13: Ladies' Room, 14: Rear Transverse Corridor, 15: Front Transverse Corridor, 16: Observation Deck, 17: Pilots, 18: Navigator, 19: Chief Engineer, 20: Captain, 21: Bunks for relief crew, 22: Landing-gear (retracted), 23: Six jet engines in each wing, 24: Engine air intake scoops beneath wing, 25: Air Separator Fins, 26: Elevons, 27: Trim and Rudder Flaps, 28: Wing Flap, 29: Wing slots, 30: Boundary-layer control slots, 31: Multiple fuel tanks.

August, 1947

73

FRANK TINSLEY '47

tion in fascinated silence, the crewman grins and scrambles out over the inclined steps to check the door's locking devices. Satisfied, he returns and closes off the gangway well with a pair of heavy doors that slide out of recesses in the after bulkhead.

"Airtight pressure doors," the Purser explains as we watch the man dog the hatches down tightly into their rubber gaskets. "From that bulkhead forward, all passenger and crew areas of the ship are pressurized at altitude." He smiles in a friendly fashion. "Care to have me show you the rest of the crate?" he asks as we turn toward the lounge.

It is a large, almost square chamber—34 by 44 feet, the Purser informs me—and more like the public rooms on a steamship than anything I had ever seen on an aircraft. Diffused sunlight filters down through an ornamental ceiling of sculptured Plexiglas, which I learn later is internally illuminated at night. Graceful columns, upholstered to shoulder height in beige leather, support the ceiling beams at frequent intervals. Brushing against one, I discover that the upholstery is soft and resilient to the touch.

"Airfoam rubber," the Purser murmurs confidentially. "Safety factor, you know. The whole ship is padded with the stuff and fitted with inset hand-holds." He points to cleverly designed grips sunk in each column. "There's not a spot aboard where you're more than five feet from one, and all interior fittings are designed without corners or protrusions of any kind. Not that she isn't a good,

The XB-35 shown here, and its jet counterpart—the XB-49—are forerunners of the giant wing of our fanciful journey. Above: Off-center bubble is pilot's canopy. Below: Overall view of 209,000 lb. craft. (Overload gross weight.)

Luxury in a Giant Wing

continued...

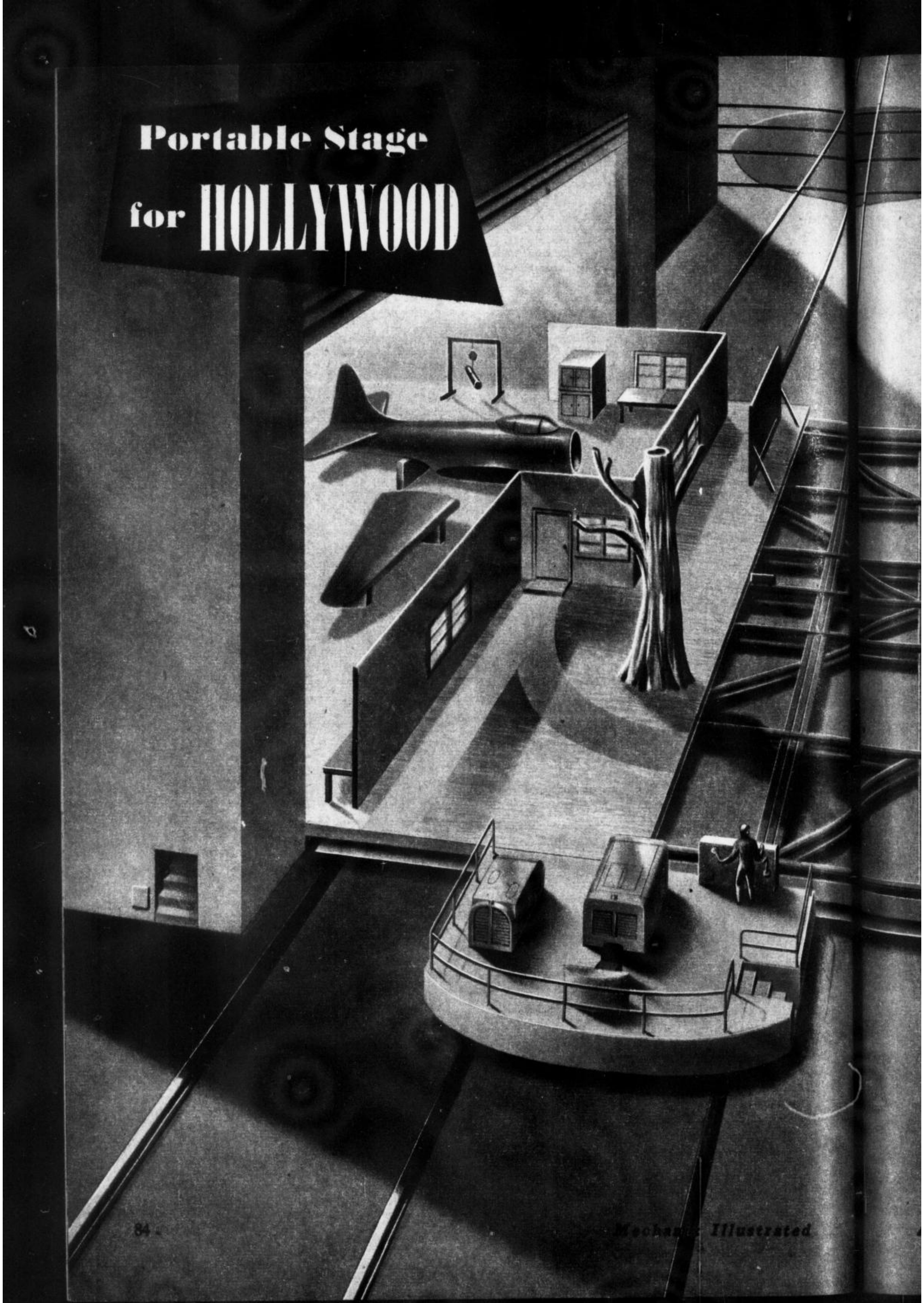
" . . . The steward hustles us up the red carpeted steps and I realize that we are among the last passengers to board ship . . . "

steady ship, you understand—it's just that we don't believe in taking any unnecessary chances!"

All around the perimeter of the lounge are built-in seats, arranged in groups of two and four and separated by magazine-strewn end-tables to foster the illusion of privacy. No one appears to be cramped.

"During meal hours," the Purser explains, "we use the lounge for extra dining space. Folding tables and chairs are stowed inside those end tables and we can serve a surprisingly large number of passengers at a sitting. For in-between

Portable Stage for HOLLYWOOD



BY JOHN WELD

EXTRAVAGANCE and the motion picture industry have always been synonomous, and the cost of making movies has continued to rise from year to year. The principal cause of added expense is wasted time. Some of this waste is due to lighting sets and changing camera angles, but much of it results from the handling of equipment, sets and materials; moving them from place to place.

Now comes an engineer, Fred Pelton, a veteran of motion picture management, with an invention which may revolutionize motion picture studio operation. His idea is a series of portable floors which can be shuttled about, from workshops to stages, on rails. Mounted on wheels, the platforms roll into shops or stages and form floors. While the sets are being built and dressed they are shop floors, and while the picture is being shot they are stage floors. In this way, instead of hauling dozens of wall, floor, and ceiling units to a stage, or supplying a stage with building materials and then constructing the set (sets take as much as two weeks to build), set construction is done directly on the platforms in the shops, where there are power machines, good supervision and good working conditions. Once made up and dressed, the set is moved intact and complete onto the stage. •

Drawing shows how, with Pelton system, sets can be built in advance and wheeled onto sound stage when needed. Under present set-up, one movie requires three or four sound stages. Even simple sets—like this one below for James Cagney—take days to build.